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US Pre-Grant Publication Full-Text Database
JPO Abstracts Database
EPO Abstracts Database
Derwent World Patents Index
IBM Technical Disclosure Bulletins

Term: 6239072.pn.

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Search History

Today's Date: 9/29/2001

DB Name	Query	Hit Count	Set Name
USPT,PGPB,JPAB,EPAB,DWPI	l5 and l8	10	L9
USPT,PGPB,JPAB,EPAB,DWPI	l6 and l7	2523	L8
USPT,PGPB,JPAB,EPAB,DWPI	safen$5 or antidot$5	6124	L7
USPT,PGPB,JPAB,EPAB,DWPI	herbicid$5 or fungicid$5 or insecticid$5	142543	L6
USPT,PGPB,JPAB,EPAB,DWPI	inhibit$4 near5 l4	59	L5
USPT,PGPB,JPAB,EPAB,DWPI	protoporphyrinogenoxidase or (protoporphyrinogen oxidase)	90	L4
USPT,PGPB,JPAB,EPAB,DWPI	protoporphrynigenoxidase or (protoporphrynigen oxidase)	0	L3
USPT,PGPB,JPAB,EPAB,DWPI	protoporphrynogenoxidase or (protoporphrynogen oxidase)	0	L2
USPT,PGPB,JPAB,EPAB,DWPI	protoporphrinogenoxidase or (protoporphrinogen oxidase)	1	L1

WEST

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Search Results - Record(s) 1 through 10 of 10 returned.

☐ 1. Document ID: US 6188003 B1

L9: Entry 1 of 10 File: USPT Feb 13, 2001

US-PAT-NO: 6188003
DOCUMENT-IDENTIFIER: US 6188003 B1

TITLE: Inbred sweet corn line

DATE-ISSUED: February 13, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Plaisted; Douglas C.	Middleton	ID	N/A	N/A
Grier; Stephen L.	Stanton	MN	N/A	N/A
Houghton; Wesley	Naples	FL	N/A	N/A

US-CL-CURRENT: 800/320.1; 435/412, 435/424, 435/430, 435/430.1, 800/266, 800/268, 800/271, 800/275, 800/298

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw. Desc | Image

☐ 2. Document ID: US 6034306 A

L9: Entry 2 of 10 File: USPT Mar 7, 2000

US-PAT-NO: 6034306
DOCUMENT-IDENTIFIER: US 6034306 A

TITLE: Inbred sweet corn line R398D

DATE-ISSUED: March 7, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Plaisted; Douglas C.	Middleton	ID	N/A	N/A
Grier; Stephen L.	Stanton	MN	N/A	N/A
Houghton; Wesley	Naples	FL	N/A	N/A

US-CL-CURRENT: 800/320.1; 435/419, 435/468, 800/271, 800/275, 800/278, 800/295, 800/298

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw. Desc | Image

☐ 3. Document ID: US 5990395 A

L9: Entry 3 of 10 File: USPT Nov 23, 1999

US-PAT-NO: 5990395
DOCUMENT-IDENTIFIER: US 5990395 A

TITLE: Inbred sweet corn line W1498A

DATE-ISSUED: November 23, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Plaisted; Douglas C.	Middleton	ID	N/A	N/A
Grier; Stephen L.	Stanton	MN	N/A	N/A
Houghton; Wesley	Naples	FL	N/A	N/A

US-CL-CURRENT: 800/320.1; 435/419, 435/468, 800/271, 800/275, 800/278, 800/295, 800/298

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw Desc | Image

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☑ 4. Document ID: CZ 200100558 A3, WO 200008936 A1, AU 9957321 A, DE 19919993 A1, BR 9913638 A, EP 1104243 A1

L9: Entry 4 of 10 File: DWPI Jun 13, 2001

DERWENT-ACC-NO: 2000-224122
DERWENT-WEEK: 200138

TITLE: Control of weeds in tolerant maize crops uses herbicidal combination containing glufosinate, glyphosate, imidazolinone, azole, cyclohexanedione or heteroaryloxyphenoxypropionic acid herbicide

INVENTOR: BIERINGER, H; HACKER, E ; WILLMS, L

PRIORITY-DATA: 1999DE-1019993 (April 30, 1999), 1998DE-1036737 (August 13, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
CZ 200100558 A3	June 13, 2001	N/A	000	A01N057/20
WO 200008936 A1	February 24, 2000	G	069	A01N057/20
AU 9957321 A	March 6, 2000	N/A	000	A01N057/20
DE 19919993 A1	November 2, 2000	N/A	000	A01N057/20
BR 9913638 A	May 22, 2001	N/A	000	A01N057/20
EP 1104243 A1	June 6, 2001	G	000	A01N057/20

INT-CL (IPC): A01N 33/18; A01N 43/50; A01N 57/20; A01N 33/18; A01N 37/22; A01N 37/40; A01N 39/04; A01N 41/10; A01N 43/10 ; A01N 43/40; A01N 43/50; A01N 43/70; A01N 43/80; A01N 43/824; A01N 43/90; A01N 47/06; A01N 47/36; A01N 57/20; A01N 37/22; A01N 37/40; A01N 39/04; A01N 41/10; A01N 43/10; A01N 43/40; A01N 43/50; A01N 43/70 ; A01N 43/80; A01N 43/824; A01N 43/90; A01N 47/06; A01N 47/36; A01N 57/20; A01N 57/20; A01N 47/36; A01N 47/06; A01N 43/90; A01N 43/824; A01N 43/80; A01N 43/70; A01N 43/50; A01N 43/40; A01N 43/10; A01N 41/10; A01N 39/04; A01N 37/40; A01N 37/22; A01N 33/18

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw Desc | Clip Img | Image

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☑ 5. Document ID: DE 19836737 A1

L9: Entry 5 of 10 File: DWPI Feb 17, 2000

DERWENT-ACC-NO: 2000-206893
DERWENT-WEEK: 200019

TITLE: Use of a synergistic herbicide combination including a glufosinate- or glyphosate-type, imidazolinone, protoporphyrinogen oxidase inhibitory azole or cyclohexanedione herbicide to control weeds in maize

INVENTOR: BIERINGER, H; HACKER, E ; WILLMS, L

PRIORITY-DATA: 1998DE-1036737 (August 13, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
DE 19836737 A1	February 17, 2000	N/A	014	A01N057/20

INT-CL (IPC): A01N 57/20

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw Desc | Clip Img | Image

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☑ 6. Document ID: EP 1104241 A1, DE 19836726 A1, WO 200008938 A1, AU 9954221 A, BR 9913637 A

L9: Entry 6 of 10 File: DWPI Jun 6, 2001

DERWENT-ACC-NO: 2000-206892
DERWENT-WEEK: 200133

TITLE: Use of a synergistic herbicide combination including glufosinate- or glyphosate-type, imidazolinone or protoporphyrinogen oxidase inhibitory azole herbicide to control weeds in oil seed rape

INVENTOR: BIERINGER, H; HACKER, E ; WILLMS, L

PRIORITY-DATA: 1998DE-1036726 (August 13, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 1104241 A1	June 6, 2001	G	000	A01N057/20
DE 19836726 A1	February 17, 2000	N/A	013	A01N057/20
WO 200008938 A1	February 24, 2000	G	000	A01N057/20
AU 9954221 A	March 6, 2000	N/A	000	A01N057/20
BR 9913637 A	May 22, 2001	N/A	000	A01N057/20

INT-CL (IPC): A01N 33/18; A01N 57/20; C07F 9/38; C07F 9/46; A01N 43/42; A01N 43/56; A01N 47/06; A01N 47/20; A01N 47/30; A01N 47/36; A01N 57/20; A01N 57/20; A01N 47/36; A01N 47/30; A01N 47/20; A01N 47/06; A01N 43/56; A01N 43/42 ; A01N 33/18

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw Desc | Clip Img | Image

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☐ 7. Document ID: CZ 200100555 A3, DE 19836700 A1, WO 200008940 A1, AU 9955128 A, BR 9913006 A, EP 1104992 A1

L9: Entry 7 of 10 File: DWPI Jun 13, 2001

DERWENT-ACC-NO: 2000-206888
DERWENT-WEEK: 200138

TITLE: Use of a synergistic herbicide combination including a glufosinate- or glyphosate-type, imidazolinone or protoporphyrinogen oxidase inhibitory azole herbicide to control weeds in cereals

INVENTOR: BIERINGER, H; HACKER, E ; WILLMS, L

PRIORITY-DATA: 1998DE-1036700 (August 13, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
CZ 200100555 A3	June 13, 2001	N/A	000	A01N057/20
DE 19836700 A1	February 17, 2000	N/A	016	A01N057/20
WO 200008940 A1	February 24, 2000	G	000	A01N057/20
AU 9955128 A	March 6, 2000	N/A	000	A01N057/20
BR 9913006 A	May 8, 2001	N/A	000	A01N057/20
EP 1104992 A1	June 13, 2001	G	000	A01N057/20

INT-CL (IPC): A01N 33/18; A01N 57/20; A01N 33/18; A01N 37/32; A01N 37/40; A01N 39/02; A01N 39/04; A01N 43/40; A01N 43/50 ; A01N 43/653; A01N 43/824; A01N 47/30; A01N 47/36; A01N 57/20; A01N 37/32; A01N 37/40; A01N 39/02; A01N 39/04; A01N 43/40; A01N 43/50; A01N 43/653; A01N 43/824; A01N 47/30; A01N 47/36; A01N 57/20; A01N 57/20; A01N 47/36; A01N 47/30; A01N 43/824; A01N 43/653; A01N 43/50; A01N 43/40; A01N 39/04; A01N 39/02; A01N 37/40; A01N 37/32; A01N 33/18

Full | Title | Citation | Front | Review | Classification | Date | Reference | ICMC | Draw. Desc | Clip Img | Image

☐ 8. Document ID: BR 9913640 A, DE 19836660 A1, WO 200008934 A1, AU 9956205 A, EP 1107667 A1

L9: Entry 8 of 10 File: DWPI Jun 5, 2001

DERWENT-ACC-NO: 2000-206882
DERWENT-WEEK: 200138

TITLE: Use of a synergistic herbicide combination including a glufosinate- or glyphosate-type, imidazolinone or protoporphyrinogen oxidase inhibitory azole herbicide to control weeds in soya

INVENTOR: BIERINGER, H; HACKER, E ; WILLMS, L

PRIORITY-DATA: 1998DE-1036660 (August 13, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
BR 9913640 A	June 5, 2001	N/A	000	A01N057/20
DE 19836660 A1	February 17, 2000	N/A	014	A01N057/20
WO 200008934 A1	February 24, 2000	G	000	A01N057/20
AU 9956205 A	March 6, 2000	N/A	000	A01N057/20
EP 1107667 A1	June 20, 2001	G	000	A01N057/20

INT-CL (IPC): A01N 33/18; A01N 57/20; C07F 9/38; C07F 9/46; A01N 37/22; A01N 37/38; A01N 37/48; A01N 43/10; A01N 43/40; A01N 43/50; A01N 43/653; A01N 43/76; A01N 43/88; A01N 43/90; A01N 47/30; A01N 47/36; A01N 47/38; A01N 57/20; A01N 57/20; A01N 47/38; A01N 47/36; A01N 47/30; A01N 43/90; A01N 43/88; A01N 43/76; A01N 43/653; A01N 43/50; A01N 43/40; A01N 43/10; A01N 37/48; A01N 37/38; A01N 37/22; A01N 33/18

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw Desc | Clip Img | Image

☐ 9. Document ID: EP 1104244 A1, DE 19836659 A1, WO 200008937 A1, AU 9957322 A, BR 9913014 A

L9: Entry 9 of 10 File: DWPI Jun 6, 2001

DERWENT-ACC-NO: 2000-206881
DERWENT-WEEK: 200133

TITLE: Use of synergistic herbicide combination including glufosinate- or glyphosate-type, imidazolinone, protoporphyrinogen oxidase inhibitory azole or hydroxybenzonitrile herbicide, to control weeds in cotton

INVENTOR: BIERINGER, H; HACKER, E ; WILLMS, L

PRIORITY-DATA: 1998DE-1036659 (August 13, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 1104244 A1	June 6, 2001	G	000	A01N057/20
DE 19836659 A1	February 17, 2000	N/A	014	A01N057/20
WO 200008937 A1	February 24, 2000	G	000	A01N057/20
AU 9957322 A	March 6, 2000	N/A	000	A01N057/20
BR 9913014 A	May 8, 2001	N/A	000	A01N057/20

INT-CL (IPC): A01N 33/18; A01N 57/20; A01N 37/22; A01N 37/40; A01N 43/18; A01N 43/50; A01N 43/54; A01N 47/38; A01N 47/30 ; A01N 47/30; A01N 47/38; A01N 43/54; A01N 43/50; A01N 43/18; A01N 37/40; A01N 37/22; A01N 33/18

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Clip Img | Image

☑ 10. Document ID: EP 1104242 A1, DE 19836684 A1, WO 200008935 A1, AU 9955127 A, BR 9913636 A

L9: Entry 10 of 10 File: DWPI Jun 6, 2001

DERWENT-ACC-NO: 2000-196285
DERWENT-WEEK: 200133

TITLE: Use of a synergistic herbicidal combination including a glufosinate- or glyphosate-type, imidazolinone or protoporphyrinogen oxidase to control weeds in rice

INVENTOR: BIERINGER, H; HACKER, E ; WILLMS, L

PRIORITY-DATA: 1998DE-1036684 (August 13, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 1104242 A1	June 6, 2001	G	000	A01N057/20
DE 19836684 A1	February 17, 2000	N/A	014	A01N057/20
WO 200008935 A1	February 24, 2000	G	000	A01N057/20
AU 9955127 A	March 6, 2000	N/A	000	A01N057/20
BR 9913636 A	May 22, 2001	N/A	000	A01N057/20

INT-CL (IPC): A01N 33/18; A01N 57/20; A01N 37/22; A01N 39/04; A01N 43/12; A01N 43/18; A01N 43/42; A01N 43/50; A01N 43/653; A01N 43/76; A01N 43/80; A01N 43/824; A01N 47/12; A01N 47/16; A01N 47/36; A01N 57/20; A01N 57/14; A01N 57/14; A01N 57/20; A01N 47/36; A01N 47/16; A01N 47/12; A01N 43/824; A01N 43/80; A01N 43/76; A01N 43/653; A01N 43/50; A01N 43/42; A01N 43/18; A01N 43/12; A01N 39/04; A01N 37/22; A01N 33/18

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Clip Img | Image

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Terms	Documents
l5 and l8	10

Display 10 Documents, starting with Document: 10

Display Format: CIT Change Format

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L9: Entry 4 of 10 File: DWPI Jun 13, 2001

DERWENT-ACC-NO: 2000-224122
DERWENT-WEEK: 200138

TITLE: Control of weeds in tolerant maize crops uses herbicidal combination containing glufosinate, glyphosate, imidazolinone, azole, cyclohexanedione or heteroaryloxyphenoxypropionic acid herbicide

A BTX:
NOVELTY - Weeds in tolerant maize crops are controlled by the application of a herbicidal combination comprising a glufosinate (I) or its esters, salts or phosphinothricin derivatives, glyphosate (II) or its ester or salt, imidazolinone, protoporphyrinogen oxidase-inhibiting azole, cyclohexanedione or heteroaryloxyphenoxypropionic acid herbicide and selective or non-selective herbicides.

ABTX:
DETAILED DESCRIPTION - Control of weeds in tolerant maize crops comprises the application of a herbicidal combination comprising:

ABTX:
(A) a glufosinate of formula (I) or its esters, salts or phophinothricin derivatives, glyphosate of formula (II) or its esters and salts, imidazolinone, protoporphyrinogen oxidase-inhibiting azole, cyclohexanedione or heteroaryloxyphenoxypropuionic acid herbicide; and

ABTX:
(B) herbicide(s) which are: (a) structurally different from herbicides (A); (b) active against monocot and dicot weeds via foliage or soil; (c) active selectively against dicots in maize; and/or (d) active selectively predominantly against dicot weeds via foliage or soil; and

ABTX:
(C) optionally a safener.

ABTX:
(ii) a herbicidal composition containing (A) and cyanazine, acetochlor, alachlor, terbutryn, benoxacor, fluthiamide, sulcotrione, mesotrione, penthoxamid, pendimethalin, iodosulfuron, metosulam, isoxaflutole, metribuzin, cloransulam, flumetsulam, florasulam, isoxachlortole, bromoxynil, clopyralid, carfentrazone, Lab271272, halosulfuron, diflufenzopyr and/or sulfosulfuron as (B) and optionally adjuvants and formulation aids.

TTX:
CONTROL WEED TOLERATE MAIZE CROP HERBICIDE COMBINATION CONTAIN GLYPHOSATE IMIDAZOLONE AZOLE ACID HERBICIDE

WEST

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L9: Entry 4 of 10 File: DWPI Jun 13, 2001

DERWENT-ACC-NO: 2000-224122
DERWENT-WEEK: 200138

TITLE: Control of weeds in tolerant maize crops uses herbicidal combination containing glufosinate, glyphosate, imidazolinone, azole, cyclohexanedione or heteroaryloxyphenoxypropionic acid herbicide

INVENTOR: BIERINGER, H; HACKER, E ; WILLMS, L

PATENT-ASSIGNEE: AVENTIS CROPSCIENCE GMBH (AVET), HOECHST-SCHERING AGREVO GMBH (AGRE)

PRIORITY-DATA: 1999DE-1019993 (April 30, 1999), 1998DE-1036737 (August 13, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
CZ 200100558 A3	June 13, 2001	N/A	000	A01N057/20
WO 200008936 A1	February 24, 2000	G	069	A01N057/20
AU 9957321 A	March 6, 2000	N/A	000	A01N057/20
DE 19919993 A1	November 2, 2000	N/A	000	A01N057/20
BR 9913638 A	May 22, 2001	N/A	000	A01N057/20
EP 1104243 A1	June 6, 2001	G	000	A01N057/20

DESIGNATED-STATES: AE AL AM AU AZ BA BB BG BR BY CA CN CR CU CZ DM EE GD GE HR HU ID IL IN IS JP KG KP KR KZ LC LK LR LT LV MD MG MK MN MX NO NZ PL RO RU SG SI SK SL TJ TM TR TT UA UZ VN YU ZA AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
CZ 200100558A3	August 10, 1999	1999WO-EP05796	N/A
CZ 200100558A3	August 10, 1999	2001CZ-0000558	N/A
CZ 200100558A3		WO 200008936	Based on
WO 200008936A1	August 10, 1999	1999WO-EP05796	N/A
AU 9957321A	August 10, 1999	1999AU-0057321	N/A
AU 9957321A		WO 200008936	Based on
DE 19919993A1	April 30, 1999	1999DE-1019993	N/A
BR 9913638A	August 10, 1999	1999BR-0013638	N/A
BR 9913638A	August 10, 1999	1999WO-EP05796	N/A
BR 9913638A		WO 200008936	Based on
EP 1104243A1	August 10, 1999	1999EP-0944356	N/A
EP 1104243A1	August 10, 1999	1999WO-EP05796	N/A
EP 1104243A1		WO 200008936	Based on

INT-CL (IPC): A01N 33/18; A01N 43/50; A01N 57/20; A01N 33/18; A01N 37/22; A01N 37/40; A01N 39/04; A01N 41/10; A01N 43/10 ; A01N 43/40; A01N 43/50; A01N 43/70; A01N 43/80; A01N 43/824; A01N 43/90; A01N 47/06; A01N 47/36; A01N 57/20; A01N 37/22; A01N 37/40; A01N 39/04; A01N 41/10; A01N 43/10; A01N 43/40; A01N 43/50;

A01N 43/70 ; A01N 43/80; A01N 43/824; A01N 43/90; A01N 47/06; A01N 47/36; A01N 57/20; A01N 57/20; A01N 47/36; A01N 47/06; A01N 43/90; A01N 43/824; A01N 43/80; A01N 43/70; A01N 43/50; A01N 43/40; A01N 43/10; A01N 41/10; A01N 39/04; A01N 37/40; A01N 37/22; A01N 33/18

RELATED-ACC-NO: 2000-206893

ABSTRACTED-PUB-NO: WO 200008936A
BASIC-ABSTRACT:

NOVELTY - Weeds in tolerant maize crops are controlled by the application of a herbicidal combination comprising a glufosinate (I) or its esters, salts or phosphinothricin derivatives, glyphosate (II) or its ester or salt, imidazolinone, protoporphyrinogen oxidase-inhibiting azole, cyclohexanedione or heteroaryloxyphenoxypropionic acid herbicide and selective or non-selective herbicides.

DETAILED DESCRIPTION - Control of weeds in tolerant maize crops comprises the application of a herbicidal combination comprising:

(A) a glufosinate of formula (I) or its esters, salts or phophinothricin derivatives, glyphosate of formula (II) or its esters and salts, imidazolinone, protoporphyrinogen oxidase-inhibiting azole, cyclohexanedione or heteroaryloxyphenoxypropuionic acid herbicide; and

(B) herbicide(s) which are: (a) structurally different from herbicides (A); (b) active against monocot and dicot weeds via foliage or soil; (c) active selectively against dicots in maize; and/or (d) active selectively predominantly against dicot weeds via foliage or soil; and

(C) optionally a safener.

Z = OH, -NHCH(CH3)CONHCH(CH3)COOH or -NHCH(CH3)CONHCH(CH2CH(CH3)2)COOH.

INDEPENDENT CLAIMS are also included for:

(i) the use of the combination for regulating the growth of maize plants or for influencing the yield or components of maize; and

(ii) a herbicidal composition containing (A) and cyanazine, acetochlor, alachlor, terbutryn, benoxacor, fluthiamide, sulcotrione, mesotrione, penthoxamid, pendimethalin, iodosulfuron, metosulam, isoxaflutole, metribuzin, cloransulam, flumetsulam, florasulam, isoxachlortole, bromoxynil, clopyralid, carfentrazone, Lab271272, halosulfuron, diflufenzopyr and/or sulfosulfuron as (B) and optionally adjuvants and formulation aids.

USE - The method is used especially for the control of weeds, e.g. Digitaria sanguinalis, Panicum dichotomiflorum, Euphorbia heterophylla, Phagopyron esculentum, Lolium multiflorum, Avena fatua and Sorghum halepense in tolerant or resistant mutant or transgenic maize crops.

ADVANTAGE - Combination of (A) and (B) has a synergistic effect. This confers economical and economical benefits, including the use of lower doses of (A) and (B), broader efficacy, extension of the treatment period and/or reduction in the number of applications required.

ABSTRACTED-PUB-NO: WO 200008936A
EQUIVALENT-ABSTRACTS:

CHOSEN-DRAWING: Dwg.0/0

DERWENT-CLASS: C01
CPI-CODES: C05-B01P; C06-D08; C06-H; C07-D09; C07-D13; C07-H; C10-D03; C10-F02; C14-V02B;

WEST

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L9: Entry 5 of 10 File: DWPI Feb 17, 2000

DERWENT-ACC-NO: 2000-206893
DERWENT-WEEK: 200019

TITLE: Use of a synergistic herbicide combination including a glufosinate- or glyphosate-type, imidazolinone, protoporphyrinogen oxidase inhibitory azole or cyclohexanedione herbicide to control weeds in maize

INVENTOR: BIERINGER, H; HACKER, E ; WILLMS, L

PATENT-ASSIGNEE: HOECHST-SCHERING AGREVO GMBH (AGRE)

PRIORITY-DATA: 1998DE-1036737 (August 13, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
DE 19836737 A1	February 17, 2000	N/A	014	A01N057/20

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
DE 19836737A1	August 13, 1998	1998DE-1036737	N/A

INT-CL (IPC): A01N 57/20

RELATED-ACC-NO: 2000-224122

ABSTRACTED-PUB-NO: DE 19836737A
BASIC-ABSTRACT:

NOVELTY - A combination of herbicides and are used to control weeds in maize crops, including glufosinate- or glyphosate-type herbicides, imidazolinones, protoporphyrinogen oxidase inhibitory azole herbicides or cyclohexanedione herbicides, and foliar and soil (residual) monocot and dicot weed herbicides.

DETAILED DESCRIPTION - A combination of herbicides (I) and (II) is used to control weeds in maize crops, provided that the crops are tolerant of (I) and (II), optionally in the presence of safeners, where:

(I) is selected from:

(A1) compounds of formula (Ia) and (Ib) and their esters and salts:

Z' = OH, NHCH(CH3)CONHCH(CH3)COOH or NHCH(CH3)CONHCH(CH2CH(CH3)2)COOH.

(A2) imidazolinones;

(A3) PPO inhibitory azole herbicides; or

(A4) cyclohexanedione herbicides; and

(II) comprises one or more compounds selected from:

(B1) herbicides of type (I) other than (I) itself;

(B2) herbicides with both foliar and soil (residual) activity against monocot and dicot weeds;

(B3) maize-selective herbicides active against dicot weeds; and

(B4) maize-selective herbicides with both foliar and soil activity, predominantly against dicot weeds.

INDEPENDENT CLAIMS are also included for the following:

(1) a method for controlling weeds in tolerant maize crops, comprising applying (I) and (II), together or separately, pre- and/or post-emergence, to the plants, parts of the plants, seeds or soil;

(2) a herbicidal composition comprising (I) and (II);

(3) use of the composition of (2) for regulating the growth of maize plants; and

(4) use of the composition of (2) for modifying the yield or contents of maize plants.

ACTIVITY - Herbicidal; plant growth regulatory.

MECHANISM OF ACTION - Protoporphyrinogen oxidase (PPO) inhibitor.

USE - Combinations of (I) and (II), applied separately or together, are useful for selective pre- and/or post-emergence control of monocot and dicot weeds in maize crops, including transgenic maize crops. Compositions containing (I) and (II) can also be used for regulating the growth of maize plants and/or for modifying the yield or contents of maize plants.

ADVANTAGE - Combinations of (I) and (II) have synergistically enhanced herbicidal activity. Application of glufosinate ammonium (400 g/ha) and dicamba (300 g/ha) to weeds at the 5-6 leaf stage gave, after 3 weeks, 100 % control of Digitaria sanguinalis and 92 % control of Panicum dichotomiflorum, compared with 15 % and 50 % respectively using glufosinate ammonium (400 g/ha) alone and 88 % and 0 % respectively using dicamba (300 g/ha) alone.

ABSTRACTED-PUB-NO: DE 19836737A
EQUIVALENT-ABSTRACTS:

CHOSEN-DRAWING: Dwg.0/0

DERWENT-CLASS: C01 C02 C03
CPI-CODES: C05-B01G; C06-D17; C06-E02; C07-B01; C07-D04C; C07-D10; C07-D12; C07-D13; C07-E01; C07-F03; C10-A10; C10-A15; C10-A18; C10-B04A; C10-C04E; C10-D03; C14-V02; C14-V02B; C14-V03;

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L9: Entry 6 of 10 File: DWPI Jun 6, 2001

DERWENT-ACC-NO: 2000-206892
DERWENT-WEEK: 200133

TITLE: Use of a synergistic herbicide combination including glufosinate- or glyphosate-type, imidazolinone or protoporphyrinogen oxidase inhibitory azole herbicide to control weeds in oil seed rape

INVENTOR: BIERINGER, H; HACKER, E ; WILLMS, L

PATENT-ASSIGNEE: HOECHST-SCHERING AGREVO GMBH (AGRE), AVENTIS CROPSCIENCE GMBH (AVET)

PRIORITY-DATA: 1998DE-1036726 (August 13, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 1104241 A1	June 6, 2001	G	000	A01N057/20
DE 19836726 A1	February 17, 2000	N/A	013	A01N057/20
WO 200008938 A1	February 24, 2000	G	000	A01N057/20
AU 9954221 A	March 6, 2000	N/A	000	A01N057/20
BR 9913637 A	May 22, 2001	N/A	000	A01N057/20

DESIGNATED-STATES: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI AE AL AM AU AZ BA BB BG BR BY CA CN CR CU CZ DM EE GD GE HR HU ID IL IN IS JP KG KP KR KZ LC LK LR LT LV MD MG MK MN MX NO NZ PL RO RU SG SI SK TJ TM TR TT UA US UZ VN YU ZA AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
EP 1104241A1	August 10, 1999	1999EP-0940185	N/A
EP 1104241A1	August 10, 1999	1999WO-EP05798	N/A
EP 1104241A1		WO 200008938	Based on
DE 19836726A1	August 13, 1998	1998DE-1036726	N/A
WO 200008938A1	August 10, 1999	1999WO-EP05798	N/A
AU 9954221A	August 10, 1999	1999AU-0054221	N/A
AU 9954221A		WO 200008938	Based on
BR 9913637A	August 10, 1999	1999BR-0013637	N/A
BR 9913637A	August 10, 1999	1999WO-EP05798	N/A
BR 9913637A		WO 200008938	Based on

INT-CL (IPC): A01N 33/18; A01N 57/20; C07F 9/38; C07F 9/46; A01N 43/42; A01N 43/56; A01N 47/06; A01N 47/20; A01N 47/30; A01N 47/36; A01N 57/20; A01N 57/20; A01N 47/36; A01N 47/30; A01N 47/20; A01N 47/06; A01N 43/56; A01N 43/42 ; A01N 33/18

ABSTRACTED-PUB-NO: DE 19836726A
BASIC-ABSTRACT:

NOVELTY - A combination of herbicides (I) and (II) are used to control weeds in oil seed rape crops, where (I) is a glufosinate- or glyphosate-type herbicide, an

imidazolinone or an azole herbicide and (II) comprises one or more compounds selected from:

(a) herbicides of type (I) other than (I);

(b) herbicides with both foliar and soil (residual) activity against monocot and/or dicot weeds; and

(c) herbicides with both foliar and soil activity, predominantly against monocot weeds.

DETAILED DESCRIPTION - A combination of herbicides (I) and (II) are used to control weeds in oil seed rape crops, provided that the crops are tolerant of (I) and (II), optionally in the presence of safeners, where (I) is selected from:

(1) compounds of formula (Ia) and (Ib) and their esters and salts;

(2) imidazolinones; or

(3) PPO inhibitory azole herbicides; and

(II) comprises one or more compounds selected from:

(1) herbicides of type (I) other than (I) itself;

(2) herbicides with both foliar and soil activity against monocot and dicot weeds;

(3) herbicides with predominantly foliar activity against dicot weeds;

(4) herbicides with predominantly foliar activity against monocot weeds; and

(5) herbicides with both foliar and soil activity, predominantly against monocot weeds:

Z' = OH, NHCH(CH3)CONHCH(CH3)COOH or NHCH(CH3)CONHCH(CH2CH(CH3)2)COOH.

INDEPENDENT CLAIMS are also included for the following:

(1) method for controlling weeds in tolerant oil seed rape crops, comprising applying (I) and (II), together or separately, pre- and/or post-emergence, to the plants, parts of the plants, seeds or soil;

(2) a herbicidal composition comprising (I) and (II);

(3) use of the composition of (2) for regulating the growth of oil seed rape plants; and

(4) use of the composition of (2) for modifying the yield or contents of oil seed rape plants.

ACTIVITY - Herbicidal; plant growth regulatory.

MECHANISM OF ACTION - Protoporphyrinogen oxidase (PPO) inhibitor.

USE - Combinations of (I) and (II), applied separately or together, are useful for selective pre- and/or post-emergence control of monocot and dicot weeds in oil seed rape crops, including transgenic oil seed rape crops. Compositions containing (I) and (II) can also be used for regulating the growth of oil seed rape plants and/or for modifying the yield or contents of oil seed rape plants.

ADVANTAGE - Combinations of (I) and (II) have synergistically enhanced herbicidal activity. Application of glufosinate ammonium (600 g/ha) and metazachlor (600 g/ha) to weeds at the 5 leaf stage gave, after 3 weeks, 100 % control of Datura stramonium, compared with 90 % using glufosinate ammonium (600 g/ha) alone and 40 % using metazachlor (600 g/ha) alone.

ABSTRACTED-PUB-NO: DE 19836726A
EQUIVALENT-ABSTRACTS:

CHOSEN-DRAWING: Dwg.0/0

DERWENT-CLASS: C01 C02 C03
CPI-CODES: C05-B01G; C06-H; C07-H; C10-A12C; C10-D03; C14-S09; C14-V02D; C14-V03;

WEST

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L9: Entry 10 of 10 File: DWPI Jun 6, 2001

DERWENT-ACC-NO: 2000-196285
DERWENT-WEEK: 200133

TITLE: Use of a synergistic herbicidal combination including a glufosinate- or glyphosate-type, imidazolinone or protoporphyrinogen oxidase to control weeds in rice

INVENTOR: BIERINGER, H; HACKER, E ; WILLMS, L

PATENT-ASSIGNEE: HOECHST-SCHERING AGREVO GMBH (AGRE), AVENTIS CROPSCIENCE GMBH (AVET)

PRIORITY-DATA: 1998DE-1036684 (August 13, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 1104242 A1	June 6, 2001	G	000	A01N057/20
DE 19836684 A1	February 17, 2000	N/A	014	A01N057/20
WO 200008935 A1	February 24, 2000	G	000	A01N057/20
AU 9955127 A	March 6, 2000	N/A	000	A01N057/20
BR 9913636 A	May 22, 2001	N/A	000	A01N057/20

DESIGNATED-STATES: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI AE AL AM AU AZ BA BB BG BR BY CA CN CR CU CZ DM EE GD GE HR HU ID IL IN IS JP KG KP KR KZ LC LK LR LT LV MD MG MK MN MX NO NZ PL RO RU SG SI SK SL TJ TM TR TT UA UZ VN YU ZA AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
EP 1104242A1	August 10, 1999	1999EP-0941558	N/A
EP 1104242A1	August 10, 1999	1999WO-EP05795	N/A
EP 1104242A1		WO 200008935	Based on
DE 19836684A1	August 13, 1998	1998DE-1036684	N/A
WO 200008935A1	August 10, 1999	1999WO-EP05795	N/A
AU 9955127A	August 10, 1999	1999AU-0055127	N/A
AU 9955127A		WO 200008935	Based on
BR 9913636A	August 10, 1999	1999BR-0013636	N/A
BR 9913636A	August 10, 1999	1999WO-EP05795	N/A
BR 9913636A		WO 200008935	Based on

INT-CL (IPC): A01N 33/18; A01N 57/20; A01N 37/22; A01N 39/04; A01N 43/12; A01N 43/18; A01N 43/42; A01N 43/50; A01N 43/653; A01N 43/76; A01N 43/80; A01N 43/824; A01N 47/12; A01N 47/16; A01N 47/36; A01N 57/20; A01N 57/14; A01N 57/14; A01N 57/20; A01N 47/36; A01N 47/16; A01N 47/12; A01N 43/824; A01N 43/80; A01N 43/76; A01N 43/653; A01N 43/50; A01N 43/42; A01N 43/18; A01N 43/12; A01N 39/04; A01N 37/22; A01N 33/18

ABSTRACTED-PUB-NO: DE 19836684A

BASIC-ABSTRACT:

NOVELTY - A combination of herbicides (I) and (II) is used to control weeds in rice crops, where (I) is a glufosinate- or glyphosate-type herbicide an imidazolinone or a protoporphyrinogen oxidase (PPO) inhibitory azole herbicide and (II) comprises one or more compounds selected from: herbicides of type (I) other than (I) itself.

DETAILED DESCRIPTION - A combination of herbicides (I) and (II) is used to control weeds in rice crops, provided that the crops are tolerant of (I) and (II), optionally in the presence of safeners, where: (I) is selected from: (A1) compounds of formula (Ia) and (Ib) and their esters and salts:

Z = OH, NHCH(CH3)CONHCH(CH3)COOH or NHCH(CH3)CONHCH(CH2CH(CH3)2)COOH;

(A2) imidazolinones; or (A3) PPO inhibitory azole herbicides; and (II) comprises one or more compounds selected from: (B1) herbicides of type (I) other than (I) itself; (B2) rice-selective herbicides with both foliar and soil (residual) activity against monocot and dicot weeds; (B3) rice-selective herbicides active against dicot weeds and/or sedges; (B4) rice-selective herbicides with foliar activity against monocot weeds; and (B5) rice-selective herbicides with both foliar and soil activity against monocot weeds.

INDEPENDENT CLAIMS are also included for the following: (1) a method for controlling weeds in tolerant rice crops, comprising applying (I) and (II), together or separately, pre- and/or post-emergence, to the plants, parts of the plants, seeds or soil; (2) a herbicidal composition comprising (I) and (II); (3) use of the composition of (2) for regulating the growth of rice plants; (4) use of the composition of (2) for modifying the yield or contents of rice plants.

ACTIVITY - Herbicidal; plant growth regulatory.

MECHANISM OF ACTION - Protoporphyrinogen oxidase (PPO) inhibitor.

USE - Combinations of (I) and (II), applied separately or together, are useful for selective pre- and/or post-emergence control of monocot and dicot weeds in rice crops, including transgenic rice crops. Compositions containing (I) and (II) can also be used for regulating the growth of rice plants and/or for modifying the yield or contents of rice plants.

ADVANTAGE - Combinations of (I) and (II) have synergistically enhanced herbicidal activity. Application of glufosinate ammonium (400 g/ha) and (45 g/ha) to weeds at the 3- to 4-leaf stage gave, after 3 weeks, 99% control of Echinochloa crus-galli, compared with 93% using glufosinate ammonium (400 g/ha) alone and 0% using bensulfuron methyl (45 g/ha) alone.

ABSTRACTED-PUB-NO: DE 19836684A
EQUIVALENT-ABSTRACTS:

CHOSEN-DRAWING: Dwg.0/0

DERWENT-CLASS: C01 C02 C03
CPI-CODES: C05-B01G; C05-B01P; C06-H; C10-B04A; C14-D05A; C14-S09; C14-V01; C14-V03A; C14-V03B;

DB Name	Query	Hit Count	Set Name
USPT,PGPB,JPAB,EPAB,DWPI	l7 and l24	3	L25
USPT,PGPB,JPAB,EPAB,DWPI	l4 and l23	16	L24
USPT,PGPB,JPAB,EPAB,DWPI	l16 or l17 or l18	1608	L23
USPT,PGPB,JPAB,EPAB,DWPI	l10 and l4	0	L22
USPT,PGPB,JPAB,EPAB,DWPI	l7 and l19	25	L21
USPT,PGPB,JPAB,EPAB,DWPI	l5 and l19	2	L20
USPT,PGPB,JPAB,EPAB,DWPI	l16 and l17 and l18	71	L19
USPT,PGPB,JPAB,EPAB,DWPI	nipyraclofen or pyraflufen or fluazolate or thidiazimin	81	L18
USPT,PGPB,JPAB,EPAB,DWPI	azafenidin or carfentrazon$1 or cinidon or flumiclorac or flumioxazin or fluthiacet or oxadiargyl or oxadiazon$1 or pentoxazon$1 or sulfentrazon$1 or flumipropyn or flupropacil or benzfendizon$1	671	L17
USPT,PGPB,JPAB,EPAB,DWPI	acifluorfen or acifluorphen or aclonifen or bifenox or chlornitrophen or ethoxyfen or fluroglycofen or fomesafen or lactofen or oxyflurfen or oxyfluorfen	1386	L16
USPT,PGPB,JPAB,EPAB,DWPI	l14 not l9	2	L15
USPT,PGPB,JPAB,EPAB,DWPI	l8 and l12	8	L14
USPT,PGPB,JPAB,EPAB,DWPI	l5 or l12	65	L13
USPT,PGPB,JPAB,EPAB,DWPI	herbicid$5 with l11	18	L12
USPT,PGPB,JPAB,EPAB,DWPI	PPO	2943	L11
USPT,PGPB,JPAB,EPAB,DWPI	6239072.pn.	2	L10
USPT,PGPB,JPAB,EPAB,DWPI	l5 and l8	10	L9
USPT,PGPB,JPAB,EPAB,DWPI	l6 and l7	2523	L8
USPT,PGPB,JPAB,EPAB,DWPI	safen$5 or antidot$5	6124	L7
USPT,PGPB,JPAB,EPAB,DWPI	herbicid$5 or fungicid$5 or insecticid$5	142543	L6
USPT,PGPB,JPAB,EPAB,DWPI	inhibit$4 near5 l4	59	L5
USPT,PGPB,JPAB,EPAB,DWPI	protoporphyrinogenoxidase or (protoporphyrinogen oxidase)	90	L4
USPT,PGPB,JPAB,EPAB,DWPI	protoporphrynigenoxidase or (protoporphrynigen oxidase)	0	L3
USPT,PGPB,JPAB,EPAB,DWPI	protoporphrynogenoxidase or (protoporphrynogen oxidase)	0	L2
USPT,PGPB,JPAB,EPAB,DWPI	protoporphrinogenoxidase or (protoporphrinogen oxidase)	1	L1

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Search Results - Record(s) 1 through 2 of 2 returned.

☐ 1. Document ID: US 6288306 B1

L20: Entry 1 of 2 File: USPT Sep 11, 2001

US-PAT-NO: 6288306
DOCUMENT-IDENTIFIER: US 6288306 B1

TITLE: Methods of selecting plants, plant tissue or plant cells resistant to a protoporphyrinogen oxidase inhibitor

DATE-ISSUED: September 11, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ward; Eric R.	Basel	N/A	N/A	CHX
Volrath; Sandra	Durham	NC	N/A	N/A

US-CL-CURRENT: 800/300; 435/413, 435/419, 800/278

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw. Desc | Image

☑ 2. Document ID: US 6084155 A

L20: Entry 2 of 2 File: USPT Jul 4, 2000

US-PAT-NO: 6084155
DOCUMENT-IDENTIFIER: US 6084155 A

TITLE: Herbicide-tolerant protoporphyrinogen oxidase ("protox") genes

DATE-ISSUED: July 4, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Volrath; Sandra L.	Durham	NC	N/A	N/A
Johnson; Marie A.	Raleigh	NC	N/A	N/A
Ward; Eric R.	Durham	NC	N/A	N/A
Heifetz; Peter B.	Durham	NC	N/A	N/A

US-CL-CURRENT: 800/300; 435/320.1, 435/419, 435/440, 536/23.2, 536/23.6, 800/306, 800/312, 800/314, 800/317.3, 800/320, 800/320.1, 800/320.2, 800/320.3

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw. Desc | Image

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L20: Entry 1 of 2 File: USPT Sep 11, 2001

DOCUMENT-IDENTIFIER: US 6288306 B1
TITLE: Methods of selecting plants, plant tissue or plant cells resistant to a protoporphyrinogen oxidase inhibitor

BSPR:
The protox enzyme serves as the target for a variety of herbicidal compounds. The herbicides that inhibit protox include many different structural classes of molecules (Duke et al., Weed Sci. 39: 465 (1991); Nandihalli et al., Pesticide Biochem. Physiol. 43: 193 (1992); Matringe et al., FEBS Lett. 245: 35 (1989); Yanase and Andoh, Pesticide Biochem. Physiol 35: 70 (1989)). These herbicidal compounds include the diphenylethers {e.g. acifluorfen, 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobezoic acid; its methyl ester; or oxyfluorfen, 2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluorobenzene)}, oxidiazoles, (e.g. oxidiazon, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-1,3,4-oxadiazol-2-(3H)-one), cyclic imides (e.g. S-23142, N-(4-chloro-2-fluoro-5-propargyloxyphenyl)-3,4,5,6-tetrahydrophthalimide; chlorophthalim, N-(4-chlorophenyl)-3,4,5,6-tetrahydrophthalimide), phenyl pyrazoles (e.g. TNPP-ethyl, ethyl 2-[1-(2,3,4-trichlorophenyl)-4-nitropyrazolyl-5-oxy]propionate; M&B 39279), pyridine derivatives (e.g. LS 82-556), and phenopylate and its O-phenylpyrrolidino- and piperidinocarbamate analogs. Many of these compounds competitively inhibit the normal reaction catalyzed by the enzyme, apparently acting as substrate analogs.

BSPR:
The herbicides that inhibit protox include many different structural classes of molecules (Duke et al., Weed Sci. 39: 465 (1991); Nandihalli et al., Pesticide Biochem. Physiol. 43: 193 (1992); Matringe et al., FEBS Lett. 245: 35 (1989); Yanase and Andoh, Pesticide Biochem. Physiol. 35: 70 (1989)), including the diphenylethers {e.g. acifluorifen, 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobezoic acid; its methyl ester; or oxyfluorfen, 2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluorobenzene)}, oxidiazoles (e.g. oxidiazon, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-1,3,4-oxadiazol-2-(3H)-one), cyclic imides (e.g. S-23142, N-(4-chloro-2-fluoro-5-propargyloxyphenyl)-3,4,5,6-tetrahydrophthalimide; chlorophthalim, N-(4-chlorophenyl)-3,4,5,6-tetrahydrophthalimide), phenyl pyrazoles (e.g. TNPP-ethyl, ethyl 2-[1-(2,3,4-trichlorophenyl)-4-nitropyrazolyl-5-oxy]propionate; M&B 39279), pyridine derivatives (e.g. LS 82-556), and phenopylate and its O-phenylpyrrolidino- and piperidinocarbamate analogs.

BSPR:
Genes encoding altered protox resistant to a protox inhibitor can also be used as selectable markers in plant cell transformation methods. For example, plants, plant tissue or plant cells transformed with a transgene can also be transformed with a gene encoding an altered protox capable of being expressed by the plant. The thus-transformed cells are transferred to medium containing the protox inhibitor wherein only the transformed cells will survive. Protox inhibitors contemplated to be particularly useful as selective agents are the diphenylethers {e.g. acifluorfen, 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobezoic acid; its methyl ester; or oxyfluorfen, 2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluorobenzene)}, oxidiazoles, (e.g. oxidiazon, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-1,3,4-oxadiazol-2-(3H)-one), cyclic imides (e.g. S-23142, N-(4-chloro-2-fluoro-5-propargyloxyphenyl)-3,4,5,6-tetrahydrophthalimide;

chlorophthalim, N-(4-chlorophenyl)-3,4,5,6-tetrahydrophthalimide), phenyl pyrazoles (e.g. TNPP-ethyl, ethyl 2-[1-(2,3,4-trichlorophenyl)-4-nitropyrazolyl-5-oxy]propionate; M&B 39279), pyridine derivatives (e.g. LS 82-556), and phenopylate and its O-phenylpyrrolidino- and piperidinocarbamate analogs. The method is applicable to any plant cell capable of being transformed with an altered protox-encoding gene, and can be used with any transgene of interest. Expression of the transgene and the protox gene can be driven by the same promoter functional on plant cells, or by separate promoters.

BSPL:
(Formula IVb; bifenox, see Dest et al., Proc. Northeast Weed Sci. Conf. 27: 31 (1973)).

BSPL:
(Formula XXI; nipyraclofen) (see page 621 of "The Pesticide Manual", 9th ed., ed. by C. R. Worthing, British Crop Protection Council, Surrey (1991));

DEPR:
Results from cross-tolerance testing show that each of the mutations identified confer tolerance to a variety of protox inhibiting compounds. In particular, the results show that 1) the AraC1-Val mutation confers resistance to protox inhibitors including, but not necessarily limited to, those having the Formulae IV, XI, XIII, XIV, XV and XVII; 2) the AraC-2Cys mutation confers resistance to protox inhibitors including, but not necessarily limited to, those having Formulae XI, XIII, XV and XVII; 3) the MzC-1Val mutation confers resistance to protox inhibitors including, but not necessarily limited to, those having the Formulae XI, XII, XIII, XIV, XV, XVI and XVII; 4) the AraC-3Ser mutation confers resistance to protox inhibitors including, but not necessarily limited to, bifenox and those having the Formulae IV, XII, XIII, XIV, XV, and XVII.

CLPR:
8. The method of claim 1, wherein the protox inhibitor is selected from the group consisting of flupropazil, flutaiacet-methyl, flumioxazin, flumiclorac, sulfentrazone, fluorogylcofen, fornesafen, lacrofen, acifluorfen, oxyfluoren, bifenox, oxardiagly, azafenidin, isopropazol, pyraflyfen-ethyl, thiadiazimin, carfentrazone, and nipyraclofen.

ORPL:
Becerril et al., "Acifluorfen Effects on Intermediates of Chlorophyll Synthesis in Green Cucumber Cotyledon Tissues", Pesticide Biochemistry and Physiology, 35: 119-126 (1989).

ORPL:
Che et al., "Localization of Target-Site of the Protoporphyrinogen Oxidase-Inhibiting Herbicide S-23142 in Spinacia-oleracea L.", Z. Naturforsch., 48(c): 350-355 (1993).

ORPL:
Corrigall et al., "Inhibition of Mammalian Protoporphyrinogen Oxidase by Acifluorfen", Biochemistry and Molecular Biology International, 34(6): 1283-1289 (1994).

ORPL:
Duke et al., "Protoporphyrinogen Oxidase-Inhibiting Herbicides", Weed Science, 39: 465-473 (1991).

ORPL:
Ichinose et al., "Selection and Characterization of Protoporphyrinogen Oxidase Inhibiting Herbicide (S23142) Resistant Photomixotrophic Cultured Cells of Nicotiana tabacum", J. Plant Physiol., 146: 693-698 (1995).

ORPL:
Jacobs J.M. et al., "Effects of the Photobleaching Herbicide, Acifluorfen-methyl, on Protoporphyrinogen Oxidation Barley Organelles, Soybean Root Mitochondria Soybean Root Nodules, and Bacteria", Archives of Biochemistry and Biophysics, 280(2): 369-375 (1990).

ORPL:
Jacobs N.J. et al., "Mechanism of Protoporphyrin IX Accumulation in Plant Cells Treated with Herbicides Inhibiting Protoporphyrinogen Oxidase", Abstract Pap Am.

Chem. Soc., Abstract #113, 206 (1-2) (1993).

ORPL:
Lee et al., "Peroxidase Involvement in the Accumulation of Protoporphyrin IX in Acifluorfen-Methyl-Treated Plant Tissues", Plant Physiology (Rockville), 105(1 Suppl.): 125 (1994) (Abstract).

ORPL:
Matringe et al., "Characterization of [3H]acifluorfen binding to purified pea etioplasts, and evidence that protoporphyrinogen oxidase specifically binds acifluorfen", Eur. J. Biochem., 209: 861-868 (1992).

ORPL:
Matringe et al., "Protoporphyrinogen oxidase inhibition by three peroxidizing herbicides: oxadiazon, LS 82-556 and M&B 39279", FEBS Letters, 245(1,2): 35-38 (1989).

ORPL:
Matsumoto et al., "A Rapid and Strong Inhibition of Protoporphyrinogen Oxidase from Several Plant Species by Oxyfluorfen", Pesticide Biochemistry and Physiology, 47: 113-118 (1993).

ORPL:
Matsumoto et al., "Variation in Crop Response to Protoporphyrinogen Oxidase Inhibitors", (Abstract) Pap Am. Chem. Soc., Abstract #124, 206 (1-2) (1993).

ORPL:
Nandihalli et al., "Correlation of Protoporphyrinogen Oxidase Inhibition by O-Phenyl Pyrrolidino-and Piperidino-Carbamates with their Herbicidal Effects", Pestic. Sci., 35: 227-235 (1992).

ORPL:
Nandihalli et al., "Enantioselectivity of Protoporphyrinogen Oxidase-Inhibiting Herbicides", Pesticide Science, 40: 265-277 (1994).

ORPL:
Pornprom et al., "Chracterization of Oxyfluorfen Tolerance in Selected Soybean Cell Line", Pesticide Biochemistry and Physiology 50: 107-114 (1994).

ORPL:
Prasad A.R.K. et al., "Generation of Resistance to the Diphenyl Ether Herbicide Acifluorfen by Mel Cells*", Biochemical and Biophysical Research Communications, 215(1): 186-191 (1995).

ORPL:
Scalla et al., "Inhibitors of Protoporphyrinogen Oxidase as Herbicides: Diphenyl Ethers and Related Photobleaching Molecules", Reviews of Weed Science, 6: 103-132 (1994).

ORPL:
Sherman et al., "Physiological Basis for Differential Sensitivities of Plant Species to Protoporphyrinogen Oxidase-Inhibiting Herbicides", Plant Physiol. 97:280-287 (1991).

ORPL:
Sherman et al., "Pyrazole Phenyl Ether Herbicides Inhibit Protoporphyrinogen Oxidase", Pesticide Biochemistry and Physiology, 40: 236-245 (1991).

ORPL:
Sherman et al., "Tissue and Cellular Localization of Porphyrins in Cucumber Cotyledon Tissue with Inhibited Protoporphyrinogen Oxidase", Plant Physiol. (Bethesda), 93(1Suppl.) (1990) (Abstract).

ORPL:
Shimizu et al., "A Novel Isourazole Herbicide, Fluthiacet-Methyl, is a Potent Inhibitor of Protoporphyrinogen Oxidase after Isomerization by Glutathione S-Transferase", Plant and Cell Physiology, 36(4): 625-632 (1995).

ORPL:
Wang et al., "New Assay Method for Protoporphyrinogen Oxidase Inhibitors Using Chloroplasts Isolated from Spinacia olearcea L", Bioscience Biotechnology and

Biochemistry, 57(12): 2205-2206 (1993).

ORPL:
Witkowski et al., "Inhibition of Plant Protoporphyrinogen Oxidase by the Herbicide Aciflurfen-Methyl", Plant Physiol. (Bethesda), 90: 1239-1242 (1989).

ORPL:
Wright et al., "Herbicidal Activity of UCC-C4243 and Acifluorfen Is Due to Inhibition of Protoporphyrinogen Oxidase", Weed Science, 43: 47-54 (1995).

WEST

End of Result Set

Generate Collection

L20: Entry 2 of 2 File: USPT Jul 4, 2000

DOCUMENT-IDENTIFIER: US 6084155 A
TITLE: Herbicide-tolerant protoporphyrinogen oxidase ("protox") genes

BSPR:
The protox enzyme serves as the target for a variety of herbicidal compounds. The herbicides that inhibit protox include many different structural classes of molecules (Duke et al., Weed Sci. 39: 465 (1991); Nandihalli et al., Pesticide Biochem Physiol. 43: 193 (1992); Matringe et al., FEBS Lett. 245: 35 (1989); Yanase and Andoh, Pesticide Biochem. Physiol. 35: 70 (1989)). These herbicidal compounds include the diphenylethers {e.g. acifluorfen, 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobezoic acid; its methyl ester; or oxyfluorfen, 2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluorobenzene)}, oxidiazoles, (e.g. oxidiazon, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-1,3,4-oxadiazol-2-(3H)-one), cyclic imides (e.g. S-23142,N-(4-chloro-2-fluoro-5-propargyloxyphenyl)-3,4,5,6-tetrahydrophthalimide; chlorophthalim, N-(4-chlorophenyl)-3,4,5,6-tetrahydrophthalimide), phenyl pyrazoles (e.g. TNPP-ethyl, ethyl 2-[1-(2,3,4-trichlorophenyl)-4-nitropyrazolyl-5-oxy]propionate; M&B 39279), pyridine derivatives (e.g. LS 82-556), and phenopylate and its O-phenylpyrrolidino- and piperidinocarbamate analogs. Many of these compounds competitively inhibit the normal reaction catalyzed by the enzyme, apparently acting as substrate analogs.

BSPR:
The present invention also provides modified forms of plant protoporphyrinogen oxidase (protox) enzymes that are resistant to compounds that inhibit unmodified naturally occurring plant protox enzymes, and DNA molecules coding for such inhibitor-resistant plant protox enzymes. Thus, in one aspect the present invention provides a DNA molecule encoding a plant protox enzyme that is capable of being incorporated into a DNA construct used to transform a plant containing wild-type, herbicide-sensitive protox, wherein the DNA molecule has at least one point mutation relative to a wild-type DNA molecule encoding plant protox such that upon transformation with the DNA construct the plant contains the DNA molecule, which renders the plant resistant to the application of a herbicide that inhibits naturally occurring plant protox. The present invention includes chimeric genes and modified forms of naturally occurring protox genes that can express the inhibitor-resistant plant protox enzymes in plants.

BSPR:
A further object of the invention is an assay to identify inhibitors of protoporphyrinogen oxidase (protox) enzyme activity that comprises:

BSPR:
A further object of the invention is an assay to identify inhibitor-resistant protoporphyrinogen oxidase (protox) mutants that comprises:

BSPR:
Genes encoding altered protox resistant to a protox inhibitor can also be used as selectable markers in plant cell transformation methods. For example, plants, plant tissue or plant cells transformed with a transgene can also be transformed with a gene encoding an altered protox capable of being expressed by the plant. The thus-transformed cells are transferred to medium containing the protox inhibitor wherein only the transformed cells will survive. Protox inhibitors contemplated to be particularly useful as selective agents are the diphenylethers {e.g. acifluorfen, 5-[2-chloro4-(trifluoromethyl)phenoxy]-2-nitrobezoic acid; its

methyl ester; or oxyfluorfen,
2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluorobenzene)}, oxidiazoles, (e.g.
oxidiazon,
3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-1,3,4-oxad
iazol-2-(3H)-one), cyclic imides (e.g. S-23142,
N-(4-chloro-2-fluoro-5-propargyloxyphenyl)-3,4,5,6-tetrahydrophthalimide;
chlorophthalim, N-(4-chlorophenyl)-3,4,5,6-tetrahydrophthalimide), phenyl
pyrazoles (e.g. TNPP-ethyl, ethyl
2-[1-(2,3,4-trichlorophenyl)-4-nitropyrazolyl-5-oxy]propionate; M&B 39279),
pyridine derivatives (e.g. LS 82-556), and phenopylate and its
O-phenylpyrrolidino- and piperidinocarbamate analogs and bicyclic triazolones as
disclosed in the International patent application WO 92/04827; EP 532146).

BSPR:
Modified inhibitor-resistant protox enzymes of the present invention are
resistant to herbicides that inhibit the naturally occurring protox activity. The
herbicides that inhibit protox include many different structural classes of
molecules (Duke et al., Weed Sci. 39: 465 (1991); Nandihalli et al., Pesticide
Biochem. Physiol. 43: 193 (1992); Matringe et al., FEBS Lett. 245: 35 (1989);
Yanase and Andoh, Pesticide Biochem. Physiol. 35: 70 (1989)), including the
diphenylethers {e.g. acifluorifen,
5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobezoic acid; its methyl ester; or
oxyfluorfen, 2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluorobenzene)},
oxidiazoles

BSPR:
An additional diphenylether of interest is one having the formula: ##STR3##
(Formula IVb; bifenox, see Dest et al., Proc. Northeast Weed Sci. Conf. 27: 31
(1973)).

BSPR:
A further diphenylether of interest is one having the formula: ##STR4## (Formula
IVc; oxyfluorfen; see Yih and Swithenbank, J. Agric. Food Chem., 23: 592 (1975))

BSPR:
Yet another diphenylether of interest is one having the formula: ##STR5##
(Formula IVd; lactofen, see page 623 of "The Pesticide Manual", 10.sup.th ed.,
ed. by C. Tomlin, British Crop Protection Council, Surrey (1994))

BSPR:
Also of significance are the class of herbicides known as imides, having the
general formula ##STR6## wherein Q equals ##STR7## (see Hemper et al. (1995) in
"Proceedings of the Eighth International Congress of Pesticide Chemistry",
Ragdale et al., eds., Amer. Chem. Soc, Washington, D.C., pp.42-48 (1994)); and
R.sub.1 equals H, Cl or F, R.sub.2 equals Cl and R.sub.3 is an optimally
substituted ether, thioether, ester, amino or alkyl group. Alternatively, R.sub.2
and R.sub.3 together may form a 5 or 6 membered heterocyclic ring. Examples of
imide herbicides of particular interest are ##STR8## (Formula VIIa;
fluthiacet-methyl, see Miyazawa et al., Brighton Crop Protection
Conference-Weeds, pp. 23-28 (1993)) ##STR9## Crop Protection Conference-Weeds,
pp. 77-82 (1991)). ##STR10##

BSPR:
Also of significance are herbicides having the general formula: ##STR12##
(Formula XVIII; thiadiazimin) (see Weiler et al., Brighton Crop Protection
Conference-Weeds, pp. 29-34 (1993)); ##STR13## (Formula XIX; carfentrazone) (see
Van Saun et al., Brighton Crop Protection Conference-Weeds: pp. 19-22 (1993));

BSPL:
N-phenylpyrazoles, such as: ##STR15## (Formula XXI; nipyraclofen) (see page 621
of "The Pesticide Manual", 9th ed., ed. by C. R. Worthing, British Crop
Protection Council, Surrey (1991));

BSPV:
(d) measuring an inhibited reactivity of the protoporphyrinogen oxidase (protox)
enzyme from step (c); and

BSPV:
(e) comparing the inhibited reactivity to the uninhibited reactivity of
protoporphyrinogen oxidase (protox) enzyme.

BSPV:
(a) incubating a first sample of protoporphyrinogen oxidase (protox) enzyme and its substrate in the presence of a second sample comprising a protoporphyrinogen oxidase (protox) enzyme inhibitor;

BSPV:
(c) incubating a first sample of a mutated protoporphyrinogen oxidase (protox) enzyme and its substrate in the presence of a second sample comprising protoporphyrinogen oxidase (protox) enzyme inhibitor;

DETL:
TABLE 4 _____ Cross tolerance to various protox inhibitors in a seed germination assay. Formula Common name Tolerance _____ II acifluorofen + III fomasafen + IV fluoroglycofen .+-. IVb bifenox + IVc oxyfluorofen + IVd lactofen .+-. VIIa fluthiacet-methyl ++ X sulfentrazone + XI flupropazil ++ XIV flumiclorac + XVI flumioxazin +++ XVII ++ XXIa BAY 11340 + XXII ++ _____ .+-. .ltoreq. 10X more tolerant than wt + .gtoreq. 10X more tolerant than wt ++ .gtoreq. 100X more tolerant than wt +++ .gtoreq. 1000X more tolerant than wt

ORPL:
Becerril et al., "Acifluorfen Effects on Intermediates of Chlorophyll Synthesis in Green Cucumber Cotyledon Tissues", Pesticide Biochemistry and Physiology, 35:119-126 (1989).

ORPL:
Che et al., "Localization of Target-Site of the Protoporphyrinogen Oxidase-Inhibiting Herbicide S-23142 in Spinacia-oleracea L.", Z. Naturforsch., 48(c):350-355 (1993).

ORPL:
Corrigall et al., "Inhibition of Mammalian Protoporphyrinogen Oxidase by Acifluorfen", Biochemistry and Molecular Biology International, 34(6):1283-1289 (1994).

ORPL:
Duke et al., "Protoporphyrinogen Oxidase-Inhibiting Herbicides", Weed Science, 39:465-473 (1991).

ORPL:
Ichinose et al., "Selection and Characterization of Protoporphyrinogen Oxidase Inhibiting Herbicide (S23142) Resistant Photomixotrophic Cultured Cells of Nicotiana tabacum", J. Plant Physiol., 146:693-698 (1995).

ORPL:
Jacobs N.J. et al., "Mechanism of Protoporphyrin IX Accumulation in Plant Cells Treated with Herbicides Inhibiting Protoporphyrinogen Oxidase", Abstract Pap Am. Chem. Soc., Abstract #113,206 (1-2) (1993).

ORPL:
Lee et al., "Peroxidase Involvement in the Accumulation of Protoporphyrin IX in Acifluorfen-Methyl-Treated Plant Tissues", Plant Physiology (Rockville), 105(1 Suppl.):125 (1994).

ORPL:
Matringe et al., "Characterization of [3H]acifluorfen binding to purified pea etioplasts, and evidence that protoporphyrinogen oxidase specifically binds acifluorfen", Eur. J. Biochem., 209:861-868 (1992).

ORPL:
Matringe et al., "Protoporphyrinogen oxidase inhibition by three peroxidizing herbicides: oxadiazon, LS 82-556 and M&B 39279", FEBS Letters, 245(1,2):35-38 (1989).

ORPL:
Matsumoto et al., "A Rapid and Strong Inhibition of Protoporphyrinogen Oxidase from Several Plant Species by Oxyfluorfen", Pesticide Biochemistry and Physiology, 47:113-118 (1993).

ORPL:

Matsumoto et al., "Variation in Crop Response to Protoporphyrinogen Oxidase Inhibitors", Abstract. Pap Am. Chem. Soc., Abstract #124, 206(1-2) (1993).

ORPL:
Nandihalli et al., "Correlation of Protoporphyrinogen Oxidase Inhibition by O-Phenyl Pyrrolildino-and Piperidino-Carbamates with their Herbicidal Effects", Pestic. Sci., 35:227-235 (1992).

ORPL:
Nandihalli et al., "Enantioselectivity of Protoporphyrinogen Oxidase-Inhibiting Herbicides", Pesticide Science, 40:265-277 (1994).

ORPL:
Pornprom et al., "Characterization of Oxyfluorfen Tolerance in Selected Soybean Cell Line", Pesticide Biochemistry and Physiology 50:107-114 (1994).

ORPL:
Prasad A.R.K. et al., "Generation of Resistance to the Diphenyl Ether Herbicide Acifluorfen by Mel Cells*", Biochemical and Biophysical Research Communications, 215(1):186-191 (1995).

ORPL:
Scalla et al., "Inhibitors of Protoporphyrinogen Oxidase as Herbicides: Diphenyl Ethers and Related Photobleaching Molecules", Reviews of Weed Science, 6:103-132 (1994).

ORPL:
Sherman et al., "Physiological Basis for Differential Sensitivities of Plant Species to Protoporphyrinogen Oxidase-Inhibiting Herbicides", Plant Physiol. 97:280-287 (1991).

ORPL:
Sherman et al., "Pyrazole Phenyl Ether Herbicides Inhibit Protoporphyrinogen Oxidase", Pesticide Biochemistry and Physiology, 40:236-245 (1991).

ORPL:
Sherman et al., "Tissue and Cellular Localization of Porphyrins in Cucumber Cotyledon Tissue with Inhibited Protoporphyrinogen Oxidase", Plant Physiol. (Bethesda), 93 (1Suppl.) (1990).

ORPL:
Shimizu et al., "A Novel Isourazole Herbicide, Fluthiacet-Methyl, is a Potent Inhibitor of Protoporphyrinogen Oxidase after Isomerization by Glutathione S-Transferase", Plant and Cell Physiology, 36(4):625-632 (1995).

ORPL:
Wang et al., "New Assay Method for Protoporphyrinogen Oxidase Inhibitors Using Chloroplasts Isolated from Spinacia oleracea L", Bioscience Biotechnology and Biochemistry, 57(12):2205-2206 (1993).

ORPL:
Witkowski et al., "Inhibition of Plant Protoporphyrinogen Oxidase by the Herbicide Acifluorfen-Methyl", Plant Physiol. (Bethesda), 90:1239-1242 (1989).

ORPL:
Wright et al., "Herbicidal Activity of UCC-C4243 and Acifluorfen Is Due to Inhibition of Protoporphyrinogen Oxidase", Weed Science, 43:47-54 (1995).

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Search Results - Record(s) 1 through 10 of 25 returned.

☐ 1. Document ID: US 20010011063 A1

L21: Entry 1 of 25 File: PGPB Aug 2, 2001

PGPUB-DOCUMENT-NUMBER: 20010011063
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010011063 A1

TITLE: Substituted 2,4-diamino-1,3,5-triazines, processes for their preparation and their use as herbicides and plant growth regulators

PUBLICATION-DATE: August 2, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Giencke, Wolfgang	Hofheim		DE	
Willms, Lothar	Hofheim		DE	
Auler, Thomas	Bad Soden		DE	
Bieringer, Hermann	Eppstein		DE	
Rosinger, Christopher	Hofheim		DE	

US-CL-CURRENT: 504/231; 544/212

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

☑ 2. Document ID: US 6294503 B1

L21: Entry 2 of 25 File: USPT Sep 25, 2001

US-PAT-NO: 6294503
DOCUMENT-IDENTIFIER: US 6294503 B1

TITLE: Fused heterocycle compounds, process for their preparation, and herbicidal compositions containing them

DATE-ISSUED: September 25, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gupta; Sandeep	Concord	OH	N/A	N/A
Wu; Shao-Yong	Willoughby Hills	OH	N/A	N/A
Tsukamoto; Masamitsu	Mayfield Hts.	OH	N/A	N/A
Ying; Bai-Ping	Concord	OH	N/A	N/A
Pulman; David A.	Mentor	OH	N/A	N/A

US-CL-CURRENT: 504/225; 544/105

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

☐ 3. Document ID: US 6265348 B1

L21: Entry 3 of 25 File: USPT Jul 24, 2001

US-PAT-NO: 6265348
DOCUMENT-IDENTIFIER: US 6265348 B1

TITLE: Alkylidenehydrazinophenylsulfonylureas, processes for their preparation and their use as herbicides and plant growth regulators

DATE-ISSUED: July 24, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kehne; Heinz	Hofheim	N/A	N/A	DEX
Willms; Lothar	Hofheim	N/A	N/A	DEX
Bauer; Klaus	Hanau	N/A	N/A	DEX
Bieringer; Hermann	Eppstein	N/A	N/A	DEX
Rosinger; Christopher	Hofheim	N/A	N/A	DEX

US-CL-CURRENT: 504/212; 504/213, 504/225, 540/481, 540/598, 544/113, 544/197, 544/198, 544/206, 544/207, 544/208, 544/209, 544/211, 544/212

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

☑ 4. Document ID: US 6239306 B1

L21: Entry 4 of 25 File: USPT May 29, 2001

US-PAT-NO: 6239306
DOCUMENT-IDENTIFIER: US 6239306 B1

TITLE: Phenylsulfonylureas, processes for their preparation, and their use as herbicides and plant growth regulations

DATE-ISSUED: May 29, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lorenz; Klaus	Weiterstadt	N/A	N/A	DEX
Willms; Lothar	Hofheim	N/A	N/A	DEX
Bauer; Klaus	Hanau	N/A	N/A	DEX
Bieringer; Hermann	Eppstein	N/A	N/A	DEX

US-CL-CURRENT: 558/257; 544/211, 544/314, 558/252, 558/253, 558/255, 560/12, 562/26, 562/430, 564/162

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

☑ 5. Document ID: US 6239071 B1

L21: Entry 5 of 25 File: USPT May 29, 2001

US-PAT-NO: 6239071
DOCUMENT-IDENTIFIER: US 6239071 B1

TITLE: 2,4-diamino-1,3,5-triazines, processes for their preparation and their use as herbicides and plant growth regulators

DATE-ISSUED: May 29, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Giencke; Wolfgang	Hofheim	N/A	N/A	DEX
Minn; Klemens	Hattersheim	N/A	N/A	DEX
Willms; Lothar	Hofheim	N/A	N/A	DEX
Bieringer; Hermann	Eppstein	N/A	N/A	DEX
Bauer; Klaus	Hanau	N/A	N/A	DEX
Rosinger; Christopher	Hofheim	N/A	N/A	DEX

US-CL-CURRENT: 504/113; 504/234, 544/208, 544/209

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Drawi Desc | Image

☐ 6. Document ID: US 6228808 B1

L21: Entry 6 of 25 File: USPT May 8, 2001

US-PAT-NO: 6228808
DOCUMENT-IDENTIFIER: US 6228808 B1

TITLE: Carbamoylphenylsulfonylureas, processes for their preparation and their use as herbicides and plant growth regulators

DATE-ISSUED: May 8, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kehne; Heinz	Hofheim	N/A	N/A	DEX
Willms; Lothar	Hofheim	N/A	N/A	DEX
Waldraff; Christian	Frankfurt	N/A	N/A	DEX
Dietrich; Hansjorg	Kriftel	N/A	N/A	DEX
Bieringer; Hermann	Eppstein	N/A	N/A	DEX
Rosinger; Christopher	Hofheim	N/A	N/A	DEX
Auler; Thomas	Kelsterbach	N/A	N/A	DEX

US-CL-CURRENT: 504/239; 504/242, 504/243, 544/319, 544/321

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Drawi Desc | Image

☐ 7. Document ID: US 6211216 B1

L21: Entry 7 of 25 File: USPT Apr 3, 2001

US-PAT-NO: 6211216
DOCUMENT-IDENTIFIER: US 6211216 B1

TITLE: Isoxazolyl- and isoxazolinyl-substituted benzoylcyclohexanediones, process for their preparation and their use as herbicides and plant growth regulators

DATE-ISSUED: April 3, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Willms; Lothar	Hofheim	N/A	N/A	DEX
Van Almsick; Andreas	Oberursel	N/A	N/A	DEX
Bieringer; Hermann	Eppstein	N/A	N/A	DEX
Auler; Thomas	Bad Soden	N/A	N/A	DEX
Thurwachter; Felix	Bad Homburg	N/A	N/A	DEX

US-CL-CURRENT: 514/378; 514/236.8, 514/269, 514/326, 514/340, 544/137, 544/298, 544/319, 546/209, 546/272.1, 548/240, 548/247

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

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☑ 8. Document ID: US 6165939 A

L21: Entry 8 of 25 File: USPT Dec 26, 2000

US-PAT-NO: 6165939
DOCUMENT-IDENTIFIER: US 6165939 A

TITLE: Concentrate herbicidal composition

DATE-ISSUED: December 26, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Agbaje; Henry E.	St. Louis	MO	N/A	N/A
Brinker; Ronald J.	Ellisville	MO	N/A	N/A
Carter; Deborah J.	Wildwood	MO	N/A	N/A

US-CL-CURRENT: 504/105; 504/107, 504/128

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

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☐ 9. Document ID: US 6121201 A

L21: Entry 9 of 25 File: USPT Sep 19, 2000

US-PAT-NO: 6121201
DOCUMENT-IDENTIFIER: US 6121201 A

TITLE: Diaryl ethers and processes for their preparation and herbicidal and desiccant compositions containing them

DATE-ISSUED: September 19, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Pulman; David A.	Mentor	OH	N/A	N/A
Ying; Bai-Ping	Concord	OH	N/A	N/A
Wu; Shao-Yong	Willoughby Hills	OH	N/A	N/A
Gupta; Sandeep	Concord	OH	N/A	N/A
Tsukamoto; Masamitsu	Mayfield Hts.	OH	N/A	N/A
Haga; Takahiro	Concord	OH	N/A	N/A

US-CL-CURRENT: 504/230; 504/238, 504/242, 504/253, 504/267, 504/269, 504/273, 504/282, 544/219, 544/238, 544/318, 544/319, 546/276.1, 548/186, 548/213, 548/255, 548/263.2, 548/370.1, 548/370.4

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

☐ 10. Document ID: US 6071860 A

L21: Entry 10 of 25 File: USPT Jun 6, 2000

US-PAT-NO: 6071860
DOCUMENT-IDENTIFIER: US 6071860 A

TITLE: 2,4-Diamino-1, 3,5-triazines, their preparation, and their use as herbicides and plant growth regulators

DATE-ISSUED: June 6, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Giencke; Wolfgang	Hofheim	N/A	N/A	DEX
Willms; Lothar	Hofheim	N/A	N/A	DEX
Bauer; Klaus	Hanau	N/A	N/A	DEX
Bieringer; Hermann	Eppstein	N/A	N/A	DEX
Rosinger; Christopher	Hofheim	N/A	N/A	DEX

US-CL-CURRENT: 504/232; 504/221, 504/222, 504/223, 504/225, 504/228, 504/233, 504/234, 544/105, 544/113, 544/183, 544/206, 544/207, 544/48, 544/51, 544/52, 544/91

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

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17 and 119	25

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Search Results - Record(s) 11 through 20 of 25 returned.

☑ 11. Document ID: US 5981440 A

L21: Entry 11 of 25 File: USPT Nov 9, 1999

US-PAT-NO: 5981440
DOCUMENT-IDENTIFIER: US 5981440 A

TITLE: Stable solid formulations of cyclohexenone oxime ether herbicides

DATE-ISSUED: November 9, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bratz; Matthias	Limburgerhof	N/A	N/A	DEX
Jager; Karl-Friedrich	Limburgerhof	N/A	N/A	DEX
Berghaus; Rainer	Speyer	N/A	N/A	DEX
Ziegler; Hans	Mutterstadt	N/A	N/A	DEX

US-CL-CURRENT: 504/344; 504/139, 504/140, 504/142

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw Desc | Image

☐ 12. Document ID: US 5925675 A

L21: Entry 12 of 25 File: USPT Jul 20, 1999

US-PAT-NO: 5925675
DOCUMENT-IDENTIFIER: US 5925675 A

TITLE: N-sulfonyliminodithio compounds useful for in plant and material protection

DATE-ISSUED: July 20, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Uhr; Hermann	Krefeld	N/A	N/A	DEX
Kugler; Martin	Leichlingen	N/A	N/A	DEX
Schrage; Heinrich	Krefeld	N/A	N/A	DEX

US-CL-CURRENT: 514/508; 504/154, 504/160, 514/456, 549/366, 558/2

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw Desc | Image

☐ 13. Document ID: US 5925597 A

L21: Entry 13 of 25 File: USPT Jul 20, 1999

US-PAT-NO: 5925597
DOCUMENT-IDENTIFIER: US 5925597 A

TITLE: Phenylsulfonylureas, processes for their preparation, and their use as herbicides and plant growth regulators

DATE-ISSUED: July 20, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lorenz; Klaus	Weiterstadt	N/A	N/A	DEX
Willms; Lothar	Hofheim	N/A	N/A	DEX
Bauer; Klaus	Hanau	N/A	N/A	DEX
Bieringer; Hermann	Eppstein	N/A	N/A	DEX

US-CL-CURRENT: 504/212; 504/213, 544/113, 544/206, 544/207, 544/208, 544/209, 544/211, 544/212, 544/216, 544/217, 544/218, 544/219

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw. Desc | Image

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☐ 14. Document ID: US 5922648 A

L21: Entry 14 of 25 File: USPT Jul 13, 1999

US-PAT-NO: 5922648
DOCUMENT-IDENTIFIER: US 5922648 A

TITLE: 2-amino-1,3,5-triazines, and their use as herbicides and plant growth regulators

DATE-ISSUED: July 13, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lorenz; Klaus	Weiterstadt	N/A	N/A	DEX
Minn; Klemens	Hattersheim	N/A	N/A	DEX
Willms; Lothar	Hofheim	N/A	N/A	DEX
Bauer; Klaus	Hanau	N/A	N/A	DEX
Bieringer; Hermann	Eppstein	N/A	N/A	DEX
Rosinger; Christopher	Hofheim	N/A	N/A	DEX

US-CL-CURRENT: 504/232; 504/219, 504/230, 504/233, 504/234, 540/481, 540/598, 544/113, 544/206, 544/207

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw. Desc | Image

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☐ 15. Document ID: US 5922645 A

L21: Entry 15 of 25 File: USPT Jul 13, 1999

US-PAT-NO: 5922645
DOCUMENT-IDENTIFIER: US 5922645 A

TITLE: Alkylidenehydrazinophenylsulfonylureas, processes for their preparation and their use as herbicides and plant growth regulators

DATE-ISSUED: July 13, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kehne; Heinz	Hofheim	N/A	N/A	DEX
Willms; Lothar	Hofheim	N/A	N/A	DEX
Bauer; Klaus	Hanau	N/A	N/A	DEX
Bieringer; Hermann	Eppstein	N/A	N/A	DEX
Rosinger; Christopher	Hofheim	N/A	N/A	DEX

US-CL-CURRENT: 504/214; 504/215, 540/481, 540/601, 544/122, 544/123, 544/238, 544/295, 544/296, 544/321, 544/323, 544/324, 544/331, 544/332

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw Desc | Image

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☐ 16. Document ID: US 5858920 A

L21: Entry 16 of 25 File: USPT Jan 12, 1999

US-PAT-NO: 5858920
DOCUMENT-IDENTIFIER: US 5858920 A

TITLE: Selective herbicides based on heteroaryloxy-acetamides E.G., fluthiamide

DATE-ISSUED: January 12, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dahmen; Peter	Neuss	N/A	N/A	DEX
Deege; Rolf	Monheim	N/A	N/A	DEX
Forster; Heinz	Kadenbach	N/A	N/A	DEX
Riebel; Hans-Jochem	Wuppertal	N/A	N/A	DEX
Jansen; Johannes-Rudolf	Monheim	N/A	N/A	DEX

US-CL-CURRENT: 504/103; 504/106, 504/108, 504/112, 504/130, 504/136, 504/139

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw Desc | Image

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☐ 17. Document ID: US 5854179 A

L21: Entry 17 of 25 File: USPT Dec 29, 1998

US-PAT-NO: 5854179
DOCUMENT-IDENTIFIER: US 5854179 A

TITLE: Sulfur-substituted phenylsulfonylureas, processes for their preparation and their use as herbicides and plant growth regulators

DATE-ISSUED: December 29, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Schnabel; Gerhard	Grosswallstadt	N/A	N/A	DEX
Willms; Lothar	Hofheim	N/A	N/A	DEX
Bauer; Klaus	Hanau	N/A	N/A	DEX
Bieringer; Hermann	Eppstein	N/A	N/A	DEX
Rosinger; Christopher	Hofheim	N/A	N/A	DEX

US-CL-CURRENT: 504/214; 504/197, 504/215, 540/601, 544/122, 544/123, 544/138, 544/243, 544/295, 544/296, 544/321, 544/323, 544/324, 544/331, 544/332, 544/82

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

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☐ 18. Document ID: US 5849666 A

L21: Entry 18 of 25 File: USPT Dec 15, 1998

US-PAT-NO: 5849666
DOCUMENT-IDENTIFIER: US 5849666 A

TITLE: N-substituted hydrazinophenylsulfonylureas, processes for their preparation and their use as herbicides and plant growth regulations

DATE-ISSUED: December 15, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kehne; Heinz	Hofheim	N/A	N/A	DEX
Willms; Lothar	Hofheim	N/A	N/A	DEX
Bauer; Klaus	Hanau	N/A	N/A	DEX
Bieringer; Hermann	Eppstein	N/A	N/A	DEX
Rosinger; Christopher	Hofheim	N/A	N/A	DEX

US-CL-CURRENT: 504/214; 504/215, 544/120, 544/121, 544/122, 544/123, 544/238, 544/295, 544/296, 544/321, 544/323, 544/324, 544/332

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

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☐ 19. Document ID: US 5705456 A

L21: Entry 19 of 25 File: USPT Jan 6, 1998

US-PAT-NO: 5705456
DOCUMENT-IDENTIFIER: US 5705456 A

TITLE: Herbicides

DATE-ISSUED: January 6, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mitchell; Glynn	Cookham	N/A	N/A	GBX
Smith; Stephen Christopher	Netherthong	N/A	N/A	GBX

US-CL-CURRENT: 504/266; 504/270, 504/283, 540/362

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

☐ 20. Document ID: US 5648315 A

L21: Entry 20 of 25 File: USPT Jul 15, 1997

US-PAT-NO: 5648315
DOCUMENT-IDENTIFIER: US 5648315 A

TITLE: Phenylsulfonylureas, Processes for their-preparation, and their use as herbicides and plant growth regulators

DATE-ISSUED: July 15, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lorenz; Klaus	Weiterstadt	N/A	N/A	DEX
Willms; Lothar	Hofheim	N/A	N/A	DEX
Bauer; Klaus	Hanau	N/A	N/A	DEX
Bieringer; Hermann	Eppstein	N/A	N/A	DEX

US-CL-CURRENT: 504/214; 504/215, 544/122, 544/123, 544/321, 544/323, 544/324, 544/331, 544/332

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

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☐ 21. Document ID: DE 19960918 A1, WO 200135741 A2

L21: Entry 21 of 25 File: DWPI May 23, 2001

DERWENT-ACC-NO: 2001-443205
DERWENT-WEEK: 200148

TITLE: Synergistic herbicidal composition useful for selective weed control in crops, especially cereals, containing tritosulfuron, and other specific herbicides, e.g. flufenacet, and optionally safener and/or further herbicide

INVENTOR: DAHMEN, P; FEUCHT, D ; KRAUSKOPF, B ; KREMER, M ; WELLMANN, A

PRIORITY-DATA: 1999DE-1055407 (November 18, 1999)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
DE 19960918 A1	May 23, 2001	N/A	012	A01N047/36
WO 200135741 A2	May 25, 2001	G	000	A01N047/36

INT-CL (IPC): A01N 39/00; A01N 43/00; A01N 47/36

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw Desc | Image

☐ 22. Document ID: DE 19958381 A1, WO 200139597 A2

L21: Entry 22 of 25 File: DWPI Jun 7, 2001

DERWENT-ACC-NO: 2001-433869
DERWENT-WEEK: 200147

TITLE: Synergistic herbicidal composition useful for selective weed control in crops, e.g. barley or maize, containing N-phenyl-uracil derivative, another herbicide, e.g. acetochlor, and optionally safener

INVENTOR: ANDREE, R; DAHMEN, P ; DREWES, M ; FEUCHT, D ; KRAUSKOPF, B ; KREMER, M ; PONTZEN, R ; WETCHOLOWSKY, I

PRIORITY-DATA: 1999DE-1058381 (December 3, 1999)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
DE 19958381 A1	June 7, 2001	N/A	038	A01N043/54
WO 200139597 A2	June 7, 2001	G	000	A01N043/54

INT-CL (IPC): A01N 25/32; A01N 43/00; A01N 43/54; A01N 57/20; A01N 47/38; A01N 47/36; A01N 43/824; A01N 43/80; A01N 43/707; A01N 43/70; A01N 43/653; A01N 43/50; A01N 43/54; A01N 39/04; A01N 37/22; A01N 33/18

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Clip Img | Image

☐ 23. Document ID: DE 19955662 A1, WO 200137652 A2

L21: Entry 23 of 25 File: DWPI May 23, 2001

DERWENT-ACC-NO: 2001-433842
DERWENT-WEEK: 200147

TITLE: Synergistic herbicidal composition useful for selective weed control in crops, especially maize, comprises carbamoyl-triazolinone derivative, another herbicide, e.g. azafenidin, and optionally safener

INVENTOR: DAHMEN, P; FEUCHT, D ; KREMER, M ; MUELLER, K ; PONTZEN, R ; WILHELM, M ; DREWES, M

PRIORITY-DATA: 1999DE-1055662 (November 19, 1999)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
DE 19955662 A1	May 23, 2001	N/A	011	A01N047/38
WO 200137652 A2	May 31, 2001	G	000	A01N000/00

INT-CL (IPC): A01N 0/00; A01N 47/38

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Clip Img | Image

☐ 24. Document ID: AU 200075198 A, DE 19962017 A1, WO 200122819 A1

L21: Entry 24 of 25 File: DWPI Apr 30, 2001

DERWENT-ACC-NO: 2001-382758
DERWENT-WEEK: 200142

TITLE: Synergistic herbicidal agents containing N-aryl-triazolinone and N-aryl-triazolinethione derivatives, useful for selective weed control in crops

INVENTOR: DAHMEN, P; DREWES, M W ; FEUCHT, D ; HAAS, W ; KRAUSKOPF, B ; KREMER, M ; PONTZEN, R ; WELLMANN, A ; DREWES, M

PRIORITY-DATA: 1999DE-1046855 (September 30, 1999)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
AU 200075198 A	April 30, 2001	N/A	000	A01N043/653
DE 19962017 A1	April 5, 2001	N/A	014	A01N043/653
WO 200122819 A1	April 5, 2001	G	000	A01N043/653

INT-CL (IPC): A01N 25/32; A01N 43/653

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Clip Img | Image

☐ 25. Document ID: AU 200077812 A, DE 19947918 A1, WO 200124633 A2

L21: Entry 25 of 25 File: DWPI May 10, 2001

DERWENT-ACC-NO: 2001-357085
DERWENT-WEEK: 200143

TITLE: Synergistic herbicidal composition useful for selective weed control in crops, especially cereals, containing bis-pyrimidinyloxy-benzoic acid derivative, another herbicide, e.g. acetochlor, and optionally safener

INVENTOR: FEUCHT, D; FUERSCH, H ; KREMER, M ; WELLMANN, A

PRIORITY-DATA: 1999DE-1047918 (October 6, 1999)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
AU 200077812 A	May 10, 2001	N/A	000	A01N043/00
DE 19947918 A1	April 12, 2001	N/A	016	A01N043/54
WO 200124633 A2	April 12, 2001	G	000	A01N043/00

INT-CL (IPC): A01N 43/00; A01N 43/54

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Drawi Desc | Clip Img | Image

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L21: Entry 2 of 25 File: USPT Sep 25, 2001

DOCUMENT-IDENTIFIER: US 6294503 B1
TITLE: Fused heterocycle compounds, process for their preparation, and herbicidal compositions containing them

DEPR:
The compositions of the present invention may be used in admixture with or in combination with other agricultural chemicals, fertilizers, adjuvants, surfactants, emulsifiers, oils, polymers or phytotoxicity-reducing agents such as herbicide safeners. In such a case, they may exhibit even better effects or activities. As other agricultural chemicals, herbicides, fungicides, antibiotics, plant hormones, plant growth regulators, insecticides, or acaricides may, for example, be mentioned. Especially with herbicidal compositions having the compounds of the present invention used in admixture with or in combination with one or more active ingredients of other herbicides, it is possible to improve the herbicidal activities, the range of application time(s) and the range of applicable weed types. Further, the compounds of the present invention and an active ingredient of another herbicide may be separately formulated so they may be mixed for use at the time of application, or both may be formulated together. The present; invention covers such herbicidal compositions.

DEPR:
Those which are believed to exhibit herbicidal effects by inhibiting chlorophyll biosynthesis in plants and abnormally accumulating a photsensitizing substance in the plant body, including a diphenyl ether type such as nitrofen, lactofen, acifluorfen-sodium, oxyfluorfen, fomesafen, bifenox, or chlomethoxyfen, a cyclic imide type such as chlorphthalim, flumioxazin, cinidon-ethyl, or flumiclorac-pentyl, and others such as oxadiazon, sulfentrazone, thidiazimin, azafenidin, carfentrazone, isopropazole, fluthiacet-methyl, pentoxazone, pyraflufen-ethyl and oxadiargyl.

DEPR:
Those which are believed to exhibit herbicidal effects by inhibiting protein synthesis of plant cells, including a chloroacetanilide type such as alachlor, metolachor (including combinations with safeners such as benoxacor, or resolved isomeric mixtures of metolachlor including safeners such as benoxacor) propachlor, acetochlor (including combinations with herbicide safeners such as dichlormid or MON 4660 or resolved isomeric mixtures of acetochlor containing safeners such as dichlormid or MON 4660), propisochlor or dimethenamid or an oxyacetamide type such as flufenacet.

WEST

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L21: Entry 4 of 25 File: USPT May 29, 2001

DOCUMENT-IDENTIFIER: US 6239306 B1
TITLE: Phenylsulfonylureas, processes for their preparation, and their use as herbicides and plant growth regulations

BSPR:
Combinations with other pesticidally active substances, such as insecticides, acaricides, herbicides, fungicides, and with safeners, fertilizers and/or growth regulators may also be prepared on the basis of these formulations, for example in the form of a ready-to-use formulation or as a tank mix.

BSPR:
Combination partners which can be employed for the active substances according to the invention in mixed formulations or as a tank mix are, for example, known active substances as described in, for example, Weed Research 26, 441-445 (1986), or "The Pesticide Manual", 9th edition, The British Crop Protection Council, 1990/91, Bracknell, England, and the literature quoted therein. Examples of herbicides known from the literature which can be combined with the compounds of the formula (I) are the following active substances (note: the compounds are either given by their common name in accordance with the International Organization for Standardization (ISO) or by the chemical name, together if appropriate with a common code number): acetochlor, acifluorfen; aclonifen; AKH 7088, i.e.
[[[1-[5-[2-chloro-4-(trifuoromethyl)phenoxy]-2-nitro-phenyl]-2-methoxyethy lidene]amino]oxy]acetic acid and its methyl ester; alachlor; alloxydim; ametryn; amidosulfuron; amitrol; AMS, i.e. ammonium sulfamate; anilofos; asulam; atrazin; azimsulfurone (DPX-A8947); aziproptryn; barban; BAS 516 H, i.e.
5-fluoro-2-phenyl-4H-3,1-benzoxazin-4-one; benazolin; benfluralin; benfuresate; bensulfuron-methyl; bensulide; bentazone; benzofenap; benzofluor; benzoylprop-ethyl; benzthiazuron; bialaphos; bifenox; bromacil; bromobutide; bromofenoxim; bromoxynil; bromuron; buminafos; busoxinone; butachlor; butamifos; butenachlor; buthidazole; butralin; butylate; cafenstrole (CH-900); carbetamide; cafentrazone (ICI-A0051); CDAA, i.e. 2-chloro-N,N-di-2-propenylacetamide; CDEC, i.e. 2-chloroallyl diethyldithiocarbamate;, chlomethoxyfen; chloramben; chlorazifop-butyl, chlormesulfon (ICI-A0051); chlorbromuron; chlorbufam; chlorfenac; chlorflurecolmethyl; chloridazon; chlorimuron ethyl; chlornitrofen; chlorotoluron; chloroxuron; chlorpropham; chlorsulfuron; chlorthal-dimethyl; chlorthiamid; cinmethylin; cinosulfuron; clethodim; clodinafop and its ester derivatives (for example clodinafop-propargyl); clomazone; clomeprop; cloproxydim; clopyralid; cumyluron (JC 940); cyanazine; cycloate; cyclosulfamuron (AC 104); cycloxydim; cycluron; cyhalofop and its ester derivatives (for example butyl ester, DEH-112); cyperquat; cyprazine; cyprazole; daimuron 2,4-DB; dalapon; desmedipham; desmetryn; di-allate; dicamba; dichlobenil; diclorprop; diclofop and its esters such as diclofop-methyl; diethatyl; difenoxuron; difenzoquat; diflufenican; dimefuron; dimethachlor; dimethametryn; dimethenamide (SAN-582H); dimethazone; clomazon; dimethipin; dimetrasulfuron, dinitramine; dinoseb; dinoterb; diphenamid; dipropetryn; diquat; dithiopyr; diuron; DNOC; eglinazine-ethyl; EL 177, i.e.
5-cyano-1-(1,1-dimethylethyl)-N-methyl-1H-pyrazole-4-carboxamide; endothal; EPTC; esprocarb; ethalfluralin; ethametsulfuron-methyl; ethidimuron; ethiozin; ethofumesate; F5231, i.e.
N-[2-chloro-4-fluoro-5-[4-(3-fluoropropyl)-4,5-dihydro-5-oxo-1H-tetrazol-1 -yl]phenyl]ethanesulfonamide; ethoxyfen and its esters (e.g. ethyl ester, HN-252); etobenzanid (HW 52); fenoprop; fenoxan, fenoxaprop and fenoxaprop-P and esters thereof, e.g. fenoxaprop-P-ethyl and fenoxaprop-ethyl; fenoxydim; fenuron; flamprop-methyl; flazasulfuron; fluazifop and fluazifop-P and esters thereof, e.g. fluazifop-butyl and fluazifop-P-butyl; fluchloralin; flumetsulam; flumeturon; flumichlorac and its esters (e.g. pentyl ester, S-23031); flumioxazin (S-482); flumipropyn; flupoxam (KNW-739); fluorodifen; fluoroglycofen-ethyl;

flupropacil (UBIC-4243); fluridone; flurochloridone; fluroxypyr; flurtamone; fomesafen; fosamine; furyloxyfen; glufosinate; glyphosate; halosaten; halosulfuron and its esters (e.g. methyl esters, NC-319); haloxyfop and its esters; haloxyfop-P (=R-haloxyfop) and its esters; hexazinone, imazamethabenz-methyl; imazapyr; imazaquin and salts such as the ammonium salt; imazethamethapyr; imazethapyr; imazolsulfuron; ioxynil; isocarbamid; isopropalin; isoproturon; isouron; isoxaben; isoxapyrifop; karbutilate; lactofen; lenacil; linuron; MCPA; MCPB; mecoprop; mefenacet; mefluidid; metamitron; metazachlor; methabenzthiazuron; metham; methazole; methoxyphenone; methyldymron; metabenzuron; methobenzuron; metobromuron; metolachlor; metosulam (XRD 511); metoxuron; metribuzin; metsulfuron-methyl; MH; molinate; monalide; monocarbamide dihydrogensulfate; monolinuron; monuron; MT 128, i.e. 6-chloro-N-(3-chloro-2-propenyl)-5-methyl-N-phenyl-3-pyridazinamin; MT 5950, i.e. N-[3-chloro-4-(1-methylethyl)-phenyl]-2-methylpentanamide; naproanilide; napropamide; naptalam; NC 310, i.e. 4-(2,4-dichlorobenzoyl)-1-methyl-5-benzyloxypyrazole; neburon; nicosulfuron; nipyraclophen; nitralin; nitrofen; nitrofluorfen; norflurazon; orbencarb; oryzalin; oxadiargyl (RP-020630); oxadiazon; oxyfluorfen; paraquat; pebulate; pendimethalin; perfluidone; phenisopham; phenmedipham; picloram; piperophos; piributicarb; pirifenop-butyl; pretilachlor; primisulfuron-methyl; procyazine; prodiamine; profluralin; proglinazine-ethyl; prometon; prometryn; propachlor; propanil; propaquizafop and its esters; propazine; propham; propisochlor; propyzamide; prosulfalin; prosulfocarb; prosulfuron (CGA-152005); pyrnachlor; pyrazolinate; pyrazon; pyrazosulfuron-ethyl; pyrazoxyfen; pyridate; pyrithiobac (KIH-2031); pyroxofop and its esters (e.g. propargyl ester); quinclorac; quinmerac; quinofop and its ester derivatives, quizalofop and quizalofop-P and their ester derivatives, e.g. quizalofop-ethyl; quizalofop-P-tefuryl and -ethyl; renriduron; rimsulfuron (DPX-E 9636); S 275, i.e. 2-[4-chloro-2-fluoro-5-(2-propynyloxy)-phenyl]-4,5,6,7-tetrahydro-2H-indaz ole; secbumeton; sethoxydim; siduron; simazine; simetryn; SN 106279, i.e. 2-[[7-[2-chloro-4-(trifluoro-methyl)-phenoxy]-2-naphthalenyl]-oxy]-propano ic acid and its methyl ester; sulfentrazon (FMC-97385, F-6285); sulfazuron; sulfometuron-methyl; sulfosate (ICI-A-0224); TCA; tebutam (GCP-5544); tebuthiuron; terbacil; terbucarb; terbuchlor; terbumeton; terbuthylazine; terbutryn; TFH 450, i.e. N,N-diethyl-3-[(2-ethyl-6-methylphenyl)-sulfonyl]-1H-1,2,4-triazol-1-carbo xamide; thenylchlor (NSK-850); thiazafluoron; thizopyr (Mon-13200); thidiazimin (SN-124085); thifensulfuron-methyl; thiobencarb; tiocarbazil; tralkoxydim; tri-allate; triasulfuron; triazofenamide; tribenuron-methyl; tri-clopyr; tridiphane; trietazine; trifluralin; triflusulfuron and esters (e.g. methyl ester, DPX-66037); trimeturon; tsitodef; vernolate; WL 110547, i.e. 5-phenoxy-1-[3-(trifluoromethyl)-phenyl]-1H-tetrazole; UBH-509; D-489; LS 82-556; KPP-300; NC-324; NC-330; KH-218; DPX-N8189; SC-0774; DOWCO-535; DK-8910; V-43482; PP-600; MBH-001; KIH-9201; ET-751; KIH-6127 and KIH-2023.

L21: Entry 5 of 25 File: USPT May 29, 2001

DOCUMENT-IDENTIFIER: US 6239071 B1
TITLE: 2,4-diamino-1,3,5-triazines, processes for their preparation and their use as herbicides and plant growth regulators

BSPR:
On the basis of these formulations, combinations with other pesticidally active substances, such as, for example, insecticides, acaricides, herbicides and fungicides, and also with safeners, fertilizers and/or growth regulators, can also be prepared, e.g. in the form of a finished formulation or as a tank mix.

BSPR:
Combination components which can be employed for the active compounds according to the invention in mixture formulations or in the tank mix are, for example, known active compounds, such as are described in, for example, Weed Research 26, 441-445 (1986), or "The Pesticide Manual", 10th edition, The British Crop Protection Council and the Royal Soc. of Chemistry, 1994 and references cited there. Herbicides known from the literature, which can be combined with the compounds of the formula (I), which can be mentioned are, for example, the following active compounds (note: the compounds are either designated by the "common name" according to the International Organization for Standardization (ISO) or by the chemical names, if appropriate together with a customary code number): acetochlor; acifluorfen; aclonifen; AKH 7088, i.e. [[[1-[5-[2-chloro-4-(trifluoromethyl)-phenoxy]-2-nitrophenyl]-2-methoxyeth ylidene]amino]oxy]acetic acid and methyl ester; alachlor; alloxydim; ametryn; amidosulfuron; amitrole; AMS, i.e. ammonium sulfamate; anilofos; asulam; atrazine; azimsulfurone (DPX-A8947); aziprotryne; barban; BAS 516 H, i.e. 5-fluoro-2-phenyl-4H-3,1-benzoxazin-4-one; benazolin; benfluralin; benfuresate; bensulfuron-methyl; bensulide; bentazone; benzofenap; benzofluor; benzoylprop-ethyl; benzthiazuron; bialaphos; bifenox; bromacil; bromobutide; bromofenoxim; bromoxynil; bromuron; buminafos; busoxinone; butachlor; butamifos; butenachlor; buthidazole; butralin; butylate; cafenstrole (CH-900); carbetamide; cafentrazone (ICI-A0051); CDAA, i.e. 2-chloro-N,N-di-2-propenylacetamide; CDEC, i.e. 2-chloroallyl diethyldithiocarbamate, chlomethoxyfen; chloramben; chlorazifop-butyl, chlormesulon (ICI-A0051); chlorbromuron; chlorbufam; chlorfenac; chlorflurecol-methyl; chloridazon; chlorimuron-ethyl; chlornitrofen; chlorotoluron; chloroxuron; chlorpropham; chlorsulfuron; chlorthal-dimethyl; chlorthiamid; cinmethylin; cinosulfuron; clethodim; clodinafop and its ester derivatives (e.g. clodinafop-propargyl); clomazone; clomeprop; cloproxydim; clopyralid; cumyluron (JC 940); cyanazine; cycloate; cyclosulfamuron (AC 104); cycloxydim; cycluron; cyhalofop and its ester derivatives (e.g. butyl ester, DEH-112); cyperquat; cyprazine; cyprazole; daimuron; 2,4-DB; dalapon; desmedipham; desmetryn; di-allate; dicamba; dichlobenil; dichlorprop; diclofop and its esters such as diclofop-methyl; diethatyl; difenoxuron; difenzoquat; diflufenican; dimefuron; dimethachlor; dimethametryn; dimethenamid (SAN-582H); dimethazone, clomazone; dimethipin; dimetrasulfuron, dinitramine; dinoseb; dinoterb; diphenamid; dipropetryn; diquat; dithiopyr; diuron; DNOC; eglinazine-ethyl; EL 77, i.e. 5-cyano-1-(1,1-dimethylethyl)-N-methyl-1H-pyrazole-4-carboxamide; endothal; EPTC; esprocarb; ethalfluralin; ethametsulfuron-methyl; ethidimuron; ethiozin; ethofumesate; F5231, i.e. N-[2-chloro-4-fluoro-5-[4-(3-fluoropropyl)-4,5-dihydro-5-oxo-1H-tetrazol-1 -yl]phenyl]ethanesulfonamide; ethoxyfen and its esters (e.g. ethyl ester, HN-252); etobenzanid (HW 52); fenoprop; fenoxan, fenoxaprop and fenoxaprop-P and also their esters e.g. fenoxaprop-P-ethyl and fenoxaprop-ethyl; fenoxydim; fenuron; flamprop-methyl; flazasulfuron; fluazifop and fluazifop-P and their esters, e.g. fluazifop-butyl and fluazifop-P-butyl; fluchloralin; flumetsulam; flumeturon; flumiclorac and its esters (e.g. pentyl ester, S-23031); flumioxazin (S482); flumipropyn; flupoxam (KNW-739); fluorodifen; fluoroglycofen-ethyl;

flupropacil (UBIC-4243); fluridone; fluorochloridone; fluroxypyr; flurtamone; fomesafen; fosamine; furyloxyfen; glufosinate; glyphosate; halosafen; halosulfuron and its esters (e.g. methyl ester, NC-319); haloxyfop and its esters, haloxyfop-P (.dbd.R-haloxyfop) and its esters; hexazinone; imazamethabenz-methyl; imazapyr; imazaquin and salts such as the ammonium salt; imazethamethapyr; imazethapyr; imazosulfuron; ioxynil; isocarbamid; isopropalin; isoproturon; isouron; isoxaben; isoxapyrifop; karbutilate; lactofen; lenacil; linuron; MCPA; MCPB; mecoprop; mefenacet; mefluidide; metamitron; metazachlor; methabenzthiazuron; metham; methazole; methoxyphenone; methyldymron; metabenzuron, methobenzuron; metobromuron; metolachlor; metosulam (XRD 511); metoxuron; metribuzin; metsulfuron-methyl; MH; molinate; monalide; monocarbamide dihydrogensulfate; monolinuron; monuron; MT 128, i.e. 6-chloro-N-(3-chloro-2-propenyl)-5-methyl-N-phenyl-3-pyridazinamine; MT 5950, i.e. N-[3-chloro-4-(1-methylethyl)phenyl]-2-methylpentanamide; naproanilide; napropamide; naptalam; NC 310, i.e. 4-(2,4-dichlorobenzoyl)-1-methyl-5-benzyloxypyrazole; neburon; nicosulfuron; nipyraclophen; nitralin; nitrofen; nitrofluorfen; norflurazon; orbencarb; oryzalin; oxadiargyl (RP-020630); oxadiazon; oxyfluorfen; paraquat; pebulate; pendimethalin; perfluidone; phenisopham; phenmedipham; picloram; piperophos; piributicarb; pirifenop-butyl; pretilachlor; primisulfuron-methyl; procyazine; prodiamine; profluralin; proglinazine-ethyl; prometon; prometryn; propachlor; propanil; propaquizafop and its esters; propazine; propham; propisochlor; propyzamide; prosulfalin; prosulfocarb; prosulfuron (CGA-152005); prynachlor; pyrazolinate; pyrazon; pyrazosulfuron-ethyl; pyrazoxyfen; pyridate; pyrithiobac (KIH-2031); pyroxofop and its esters (e.g. propargyl ester); quinclorac; quinmerac; quinofop and its ester derivatives, quizalofop und quizalofop-P and their ester derivatives e.g. quizalofop-ethyl; quizalofop-P-tefuryl und -ethyl; renriduron; rimsulfuron (DPX-E 9636); S 275, i.e. 2-[4-chloro-2-fluoro-5-(2-propynyloxy)phenyl]4,5,6,7-tetrahydro-2H-indazol e; secbumeton; sethoxydim; siduron; simazine; simetryn; SN 106279, i.e. 2-[[7-[2-chlor-4-(trifluoro-methyl)phenoxy]-2-naphthalenyl]oxy]propanoic acid and methyl esters; sulfentrazon (FMC-97285, F-6285); sulfazuron; sulfometuron-methyl; sulfosate (ICI-A0224); TCA; tebutam (GCP-5544); tebuthiuron; terbacil; terbucarb; terbuchlor; terbumeton; terbuthylazine; terbutryn; TFH 450, i.e. N,N-diethyl-3-[(2-ethyl-6-methylphenyl)sulfonyl]-1H-1,2,4-triazole-1-carbo xamide; thenylchlor (NSK-850); thiazafluron; thizopyr (Mon-13200); thidiazimin (SN-24085); thifensulfuron-methyl; thiobencarb; tiocarbazil; tralkoxydim; tri-allate; triasulfuron; triazofenamide; tribenuron-methyl; triclopyr; tridiphane; trietazine; trifluralin; triflusulfuron and esters (e.g. methyl ester, DPX-66037); trimeturon; tsitodef; vernolate; WL 110547, i.e. 5-phenoxy-1-[3-(trifluoromethyl)phenyl]-1H-tetrazole; UBH-509; D-489; LS 82-556; KPP-300; NC-324; NC-330; KH-218; DPX-N8189; SC-0774; DOWCO-535; DK-8910; V-53482; PP-600; MBH-001; KIH-9201; ET-751; KIH-6127 and KIH-2023.

L21: Entry 6 of 25 File: USPT May 8, 2001

DOCUMENT-IDENTIFIER: US 6228808 B1
TITLE: Carbamoylphenylsulfonylureas, processes for their preparation and their use as herbicides and plant growth regulators

BSPR:
Based on these formulations it is also possible to produce combinations with other pesticidally active substances, for example insecticides, acaricides, herbicides and fungicides, and also with safeners, fertilizers and/or growth regulators, for example in the form of a ready-mix or tank mix.

BSPR:
Suitable active ingredients which can be combined with the active ingredients according to the invention in mixed formulations or in a tank mix are, for example, known active ingredients as described in for example Weed Research 26, 441-445 (1986), or "The Pesticide Manual", 11th edition, The British Crop Protection Council and the Royal Soc. of Chemistry, 1997 and in the literature cited therein. For example the following active ingredients may be mentioned as herbicides which are known from the literature and which can be combined with the compounds of the formula (I) (note: the compounds are either named by the "common name" in accordance with the International Organization for Standardization (ISO) or by the chemical names, if appropriate together with a customary code number): acetochlor; acifluorfen; aclonifen; AKH 7088, i.e. [[[1-[5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrophenyl]-2-methoxyethylidene]amino]oxy]acetic acid and its methyl ester; alachlor; alloxydim; ametryn; amidosulfuron; amitrol; AMS, i.e. ammonium sulfamate; anilofos; asulam; atrazine; azafenidin; azimsulfurone (DPX-A8947); aziprotryn; barban; BAS 516 H, i.e. 5-fluoro-2-phenyl-4H-3,1-benzoxazin-4-one; BAS 620 H; BAS 65400 H; BAY FOE 5043; benazolin; benfluralin; benfuresate; bensulfuron-methyl; bensulide; bentazone; benzofenap; benzofluor; benzoylprop-ethyl; benzthiazuron; bialaphos; bifenox; bispyribac-Na; bromacil; bromobutide; bromofenoxim; bromoxynil; bromuron; buminafos; busoxinone; butachlor; butamifos; butenachlor; buthidazole; butralin; butroxydim; butylate; cafenstrole (CH-900); caloxydim; carbetamide; cafentrazone ethyl; CDAA, i.e. 2-chloro-N,N-di-2-propenylacetamide; CDEC, i.e. 2-chloroallyl diethyidithiocarbamate; chlomethoxyfen; chloramben; chlorazifop-butyl, chlorbromuron; chlorbufam; chlorfenac; chlorflurecol-methyl; chloridazon; chlorimuron ethyl; chlornitrofen; chlorotoluron; chloroxuron; chlorpropham; chlorsulfuron; chlorthal-dimethyl; chlorthiamid; cinmethylin; cinosulfuron; clethodim; clodinafop and its ester derivatives (for example clodinafop-propargyl); clomazone; clomeprop; cloproxydim; clopyralid; cloransulam-methyl; cumyluron (JC 940); cyanazine; cycloate; cyclosulfamuron (AC 104); cycloxydim; cycluron; cyhalofop and its ester derivatives (for example butyl ester, DEH-112); cyperquat; cyprazine; cyprazole; daimuron; 2,4-DB; dalapon; desmedipham; desmetryn; di-allate; dicamba; dichlobenil; dichlorprop; diclofop and its esters such as diclofop-methyl; diclosulam, i.e. N-(2,6-dichlorophenyl)-5-ethoxy-7-fluoro[1,2,4]triazolo[1,5-c]pyrimidine-2-sulfonamide; diethatyl; difenoxuron; difenzoquat; diflufenican; diflufenzopyr (BAS 654 00H), dimefuron; dimethachlor; dimethametryn; dimethenamid (SAN-582H); dimethazone, clomazon; dimethipin; dimetrasulfuron, dinitramine; dinoseb; dinoterb; diphenamid; dipropetryn; diquat; dithiopyr; diuron; DNOC; eglinazine-ethyl; EL 77, i.e. 5-cyano-1-(1,1-dimethylethyl)--N-methyl-1H-pyrazole-4-carboxamide; endothal; EPTC; esprocarb; ethalfluralin; ethametsulfuron-methyl; ethidimuron; ethiozin; ethofumesate; F5231, i.e. N-[2-chloro-4-fluoro-5-[4-(3-fluoropropyl)-4,5-dihydro-5-oxo-1H-tetrazol-1-yl]phenyl]ethanesulfonamide; ethoxyfen and its esters (for example ethyl ester, HN-252); etobenzanid (HW 52); fenoprop; fenoxan, fenoxaprop and fenoxaprop-P and their esters, for example fenoxaprop-P-ethyl and fenoxaprop-ethyl; fenoxydim; fenuron; flamprop-methyl; flazasulfuron; fluazifop and fluazifop-P and their

esters, for example fluazifop-butyl and fluazifop-P-butyl; fluchloralin; flumetsulam; flumeturon; flumiclorac and its esters (for example pentyl ester, S-23031); flumioxazin (S-482); flumipropyn; flupoxam (KNW-739); fluorodifen; fluoroglycofen-ethyl; flupropacil (UBIC-4243); flupyrsulfuron-methyl-sodium; fluridone; flurochloridone; fluroxypyr; flurtamone; fluthiacet-methyl; fomesafen; fosamine; furyloxyfen; glufosinate; glyphosate; halosafen; halosulfuron and its esters (for example methyl ester, NC-319); haloxyfop and its esters; haloxyfop-P (=R-haloxyfop) and its esters; hexazinone; imazamethabenz-methyl; imazamox; imazapyr; imazaquin and salts such as the ammonium salt; imazethamethapyr; imazethapyr; imazosulfuron; indanofan (MK-243), ioxynil; isocarbamid; isopropalin; isoproturon; isouron; isoxaben; isoxaflutole; isoxapyrifop; karbutilate; lactofen; lenacil; linuron; MCPA; MCPB; mecoprop; mefenacet; mefluidid; metamitron; metazachlor; methabenzthiazuron; metham; methazole; methoxyphenone; methyidymron; metobenzuron; metobromuron; metolachlor; metosulam (XRD 511); metoxuron; metribuzin; metsulfuron-methyl; MH; molinate; monalide; monocarbamide dihydrogensulfate; monolinuron; monuron; MT 128, i.e. 6-chloro-N-(3-chloro-2-propenyl)-5-methyl-N-phenyl-3-pyridazin-amine; MT 5950, i.e. N-[3-chloro-4-(1-methylethyl)-phenyl]-2-methyl-pentanamide; naproanilide; napropamide; naptalam; NC 310, i.e. 4-(2,4-dichlorobenzoyl)-1-methyl-5-benzyloxypyrazole; neburon; nicosulfuron; nipyraclophen; nitralin; nitrofen; nitrofluorfen; norflurazon; orbencarb; oryzalin; oxadiargyl (RP-020630); oxadiazon; oxasulfuron; oxaziclomefone (MY-100); oxyfluorfen; paraquat; pebulate; pendimethalin; pentaoxazone (KPP-314); perfluidone; phenisopham; phenmedipham; picloram; piperophos; piributicarb; pirifenop-butyl; pretilachlor; primisulfuron-methyl; procyazine; prodiamine; profluralin; proglinazine-ethyl; prometon; prometryn; propachlor; propanil; propaquizafop and its esters; propazine; propham; propisochlor; propyzamide; prosulfalin; prosulfocarb; prosulfuron (CGA-152005); prynachlor; pyroflufen-ethyl; pyrazolinate; pyrazon; pyrazosulfuron-ethyl; pyrazoxyfen; pyribenzoxim (LGC-40836); pyributicarb; pyridate; pyriminobac-methyl; pyrithiobac (KIH-2031); pyroxofop and its esters (for example propargyl ester); quinclorac; quinmerac; quinofop and its ester derivatives, quizalofop and quizalofop-P and their ester derivatives, for example quizalofop-ethyl; quizalofop-P-tefuryl and -ethyl; renriduron; rimsulfuron (DPX-E 9636); S 275, i.e. 2-[4-chloro-2-fluoro-5-(2-propynyloxy)phenyl]-4,5,6,7-tetrahydro-2H-indazo le; secbumeton; sethoxydim; siduron; simazine; simetryn; SN 106279, i.e. 2-[[7-[2-chloro-4-(trifluoromethyl)phenoxy]-2-naphthalenyl]oxy]propanoic acid and its methyl ester; sulcotrione; sulfentrazon (FMC-97285, F-6285); sulfazuron; sulfometuron-methyl; sulfosate (ICI-A0224); sulfosulfuron; TCA; tebutam (GCP-5544); tebuthiuron; terbacil; terbucarb; terbuchlor; terbumeton; terbuthylazine; terbutryn; TFH 450, i.e. N,N-diethyl-3-[(2-ethyl-6-methylphenyl)sulfonyl]-1H-1,2,4-triazol-1-carbox amide; thenylchlor (NSK-850); thiazafluron; thiazopyr (Mon-13200); thidiazimin (SN-24085); thifensulfuron-methyl; thiobencarb; tiocarbazil; tralkoxydim; tri-allate; triasulfuron; triaziflam; triazofenamide; tribenuron-methyl; triclopyr; tridiphane; trietazine; trifluralin; triflusulfuron and its esters (for example methyl ester, DPX-66037); trimeturon; tsitodef; vernolate; WL 110547, i.e. 5-phenoxy-1-[3-(trifluoromethyl)phenyl]-1H-tetrazole; JTC-101; UBH-509; D489; LS 82-556; KPP-300; NC-324; NC-330; KH-218; DPX--N8189; SC-0774; DOWCO-535; DK-8910; V-53482; PP600; MBH-001; KIH-9201; ET-751; KIH4127 and KIH-2023.

L21: Entry 8 of 25 File: USPT Dec 26, 2000

DOCUMENT-IDENTIFIER: US 6165939 A
TITLE: Concentrate herbicidal composition

BSPR:
Additional water-soluble herbicidal active ingredients that can optionally be included in a contemplated composition are exemplified without restriction by water-soluble forms or derivatives, such as water-soluble salts, of acifluorfen, asulam, benazolin, bentazon, bialaphos, bispyribac, bromacil, bromoxynil, chloramben, clopyralid, 2,4-D, 2,4-DB, dalapon, dicamba, dichlorprop, diclofop, difenzoquat, diquat, endothall, fenac, fenoxaprop, flamprop, fluazifop, fluoroglycofen, fluroxypyr, fomesafen, fosamine, haloxyfop, imazameth, imazamethabenz, imazamox, imazapic, imazapyr, imazaquin, imazethapyr, ioxynil, MCPA, MCPB, mecoprop, methylarsonic acid, naptalam, nonanoic acid, paraquat, picloram, sulfamic acid, 2,3,6-TBA, TCA and triclopyr.

BSPR:
Additional water-insoluble herbicides that can optionally be included in a contemplated composition are exemplified without restriction by aclonifen, amidosulfuron, anilofos, azafenidin, azimsulfuron, benfluralin, benfuresate, bensulfuron-methyl, bensulide, benzofenap, bifenox, bromobutide, bromofenoxim, butamifos, butralin, butroxydim, butylate, cafenstrole, carbetamide, carfentrazone-ethyl, chlomethoxyfen, chlorbromuron, chloridazon, chlorimuron-ethyl, chlornitrofen, chlorotoluron, chlorpropham, chlorsulfuron, chlorthal-dimethyl, chlorthiamid, cinmethylin, cinosulfuron, clethodim, clodinafop-propargyl, clomazone, clomeprop, cloransulam-methyl, cycloate, cyclosulfamuron, cycloxydim, cyhalofop-butyl, daimuron, desmedipham, dichlobenil, diclofop-methyl, diflufenican, dimefuron, dimepiperate, dinitramine, dinoterb, diphenamid, dithiopyr, diuron, EPTC, esprocarb, ethalfluralin, ethametsulfuron-methyl, ethofumesate, ethoxysulfuron, etobenzanid, fenoxaprop-ethyl, fenuron, flamprop-methyl, flazasulfuron, fluazifop-butyl, fluchloralin, flumetsulam, flumiclorac-pentyl, flumioxazin, fluometuron, fluorochloridone, fluoroglycofen-ethyl, flupoxam, flurenol, fluridone, fluroxypyr-1-methylheptyl, flurtamone, fluthiacet-methyl, fomesafen, halosulfuron, haloxyfop-methyl, hexazinone, imazosulfuron, indanofan, isoproturon, isouron, isoxaben, isoxaflutole, isoxapyrifop, lactofen, lenacil, linuron, mefenacet, metamitron, methabenzthiazuron, methyldymron, metobenzuron, metobromuron, metosulam, metoxuron, metribuzin, metsulfuron, molinate, monolinuron, naproanilide, napropamide, naptalam, neburon, nicosulfuron, norflurazon, orbencarb, oryzalin, oxadiargyl, oxadiazon, oxasulfuron, oxyfluorfen, pebulate, pendimethalin, pentanochlor, pentoxazone, phenmedipham, piperophos, primisulfuron, prodiamine, propanil, propaquizafop, propham, propyzamide, prosulfocarb, prosulfuron, pyraflufen-ethyl, pyrazolynate, pyrazosulfuron-ethyl, pyrazoxyfen, pyributicarb, pyridate, pyriminobac-methyl, quinclorac, quinmerac, quizalofop-ethyl, rimsulfuron, sethoxydim, siduron, sulcotrione, sulfentrazone, sulfometuron, sulfosulfuron, tebutam, tebuthiuron, terbacil, thiazopyr, thifensulfuron, thiobencarb, tiocarbazil, tralkoxydim, triallate, triasulfuron, tribenuron, trifluralin, triflusulfuron and vernolate.

BSPR:
As indicated above, the oil phase optionally contains one or more additional water-insoluble herbicides. Another optional ingredient that, if included, is generally present predominantly in the oil phase, is a safener for the chloroacetamide herbicide. A safener is a compound that reduces injury by the chloroacetamide herbicide to crop plants, particularly crop plants that have not emerged above the soil surface at the time of application. Safeners are extensively used in herbicidal products containing acetochlor or metolachlor and are effective in reducing pre-emergence injury to corn by the acetochlor or metolachlor. Illustrative examples of safeners that can optionally be included in

a composition of the invention are benoxacor, fenclorim, flurazole, fluxofenim, furilazole and oxabetrinil. Presently preferred safeners are benoxacor ((.+-.)-4-(dichloroacetyl)-3,4-dihydro-3-methyl-2H-1,4-benzoxazine) and furilazole ((.+-.)-3-(dichloroacetyl)-5-(2-furanyl)-2,2-dimethyloxazolidine). Benoxacor is especially preferred where the composition contains metolachlor, and furilazole is especially preferred where the composition contains acetochlor.

BSPR:
The safener, if present, should be included in an amount effective to reduce injury to crop plants caused by the chloroacetamide herbicide. Typically such an amount is provided where the chloroacetamide herbicide and the safener are present in a ratio by weight of about 5:1 to about 100:1, for example about 20:1 to about 40:1.

BSPR:
Where the chloroacetamide herbicide is acetochlor and the safener is furilazole, the concentration of furilazole in the composition as a whole is zero to about 1.5% by weight, for example zero to about 1% by weight. An exemplary concentration range for a safener, if present, is 0.26% to 0.78% by weight. Weight/volume concentrations of furilazole depend on the specific gravity of the composition, but in preferred compositions range illustratively from zero to about 12 g/l.

BSPR:
An organic premix is also prepared by mixing together with agitation in a second vessel, preferably in the following order, (a) organic solvent if included, (b) the chloroacetamide herbicide, (c) safener if included, (d) anionic component of the stabilizing system (including counterions), and (e) nonionic component of the stabilizing system. The ingredients of the organic premix are added in relative quantities calculated to provide the desired proportions of these ingredients in the finished composition. If the activating agent or any component thereof has HLB lower than about 13, it can optionally be included in the organic premix instead of in the aqueous premix.

BSPR:
It will readily be understood that the crop must be capable of tolerating the chloroacetamide and triazine herbicides. A preferred crop exhibiting a high degree of tolerance to certain chloroacetamide and triazine herbicides is corn (maize). Where corn has not yet emerged at the time of application, certain chloroacetamide herbicides, even those such as acetochlor and metolachlor commonly used pre-emergence in corn, can in some circumstances cause injury to the corn, and in such an application it is preferred to use a composition of the invention containing a safener. Where the application is being made post-emergence to corn tolerant of the foliar-active herbicide, for example to Roundup Ready.RTM. corn, a safener is generally unnecessary.

DEPR:
A herbicidal suspoemulsion composition is prepared having as active ingredients glyphosate, acetochlor and atrazine, together with the safener furilazole, by the following procedure. "Surfactant M" is an activating agent containing 70% polyoxyethylene (15) tallowamine (HLB=14), in which most of the balance of the preparation is polyethylene glycol.

DEPR:
A herbicidal suspoemulsion composition is prepared having as active ingredients glyphosate, acetochlor and atrazine, together with the safener furilazole, by the following procedure.

DEPR:
A herbicidal suspoemulsion composition is prepared having as active ingredients glyphosate, acetochlor and atrazine, with no safener, by the following procedure.

CLPR:
12. A composition of claim 10 that further comprises a safener in an amount effective to reduce injury to crop plants caused by said acetochlor.

CLPR:
13. A composition of claim 12 wherein said safener is furilazole.

CLPR:

16. A composition of claim 14 that further comprises a safener in an amount effective to reduce injury to crop plants caused by said metolachlor.

CLPR:
17. A composition of claim 16 wherein said safener is selected from benoxacor, fenclorim, flurazole, fluxofenim, furilazole and oxabetrinil.

CLPR:
18. A composition of claim 17 wherein said safener is benoxacor or furilazole, and wherein said metolachlor and said safener are present in a ratio by weight of about 5:1 to about 100:1.

L21: Entry 11 of 25 File: USPT Nov 9, 1999

DOCUMENT-IDENTIFIER: US 5981440 A
TITLE: Stable solid formulations of cyclohexenone oxime ether herbicides

BSPR:
In order to guarantee use in accordance with practice, it may be necessary to add further formulation auxiliaries. These include, for example, herbicidally active compounds, antidotes, water-soluble salts, dispersants, wetting agents, binders, lubricants, absorptive carriers, antifoams, preservatives, colorants, pigments or further adjuvants or surfactants customary in agricultural practice.

BSPR:
2,4-D, 2,4-DB, acetochlor, acifluorfen, aclonifen, alachlor, allidochlor, ametryn, amidosulfuron, amitrole, anilofos, asulam, atrazine, azimsulfuron, aziprotryne, barban, benazolin, benfluralin, benfuresate, bensulfuron, bensulide, bentazone, benzofenap, benzofluor, benzoylprop, benzthiazuron, bifenox, bisalafos, bromacil, bromobutide, bromofenoxim, bromoxynil, buminafos, butachlor, butamifos, butenachlor, buthidazole, butralin, buturon, butylate, cafenstrole, carbetamide, chloramben, chlorbromuron, chlorbufam, chlorfenac, chloridazon, chlorimuron, chlornitrofen, chlorfenprop, chloroxuron, chlorpropham, chlorsulfuron, chlorthal-dimethyl, chlorthiamid, chlortoluron, cinmethylin, cinosulfuron, clodinafop, clomazone, clomeprop, clopyralid, cumyluron, cyanazine, cycloate, cyclosulfamuron, cycluron, cyhalofop, cyperquat, cyprazine, cyprazole, dalapon, desmedipham, desmetryn, di-allate, dicamba, dichlobenil, dichlorprop, dichlorprop-P, diclofop, diethatyl, difenoxuron, difenzoquat, diflufenican, dimefuron, dimethachlor, dimethametryn, dimethenamid, dinitramine, dinoseb, dinoterb, diphenamid, dipropetryn, diquat, dithiopyr, diuron, DNOC, dymron, eglinazine, endothal, EPTC, esprocarb, ethalfluralin, ethametsulfuron, ethidimuron, ethiozin, ethofumesate, ethoxyfen, etobenzanid, fenoprop, fenoxaprop, fenoxaprop-P, fenthiaprop, fenuron, flamprop, flazasulfuron, fluazifop, fluazifop-P, fluchloralin, flumetsulam, flumiclorac, flumioxazin, flumipropyn, fluometuron, fluorbentranil, fluorochloridone, fluorodifen, fluoroglycofen, flupoxam, flupropacil, fluridone, fluroxypyr, flurtamone, fomesafen, fosamine, furyloxyfen, glufosinate-ammonium, glyphosate, halosulfuron, haloxyfop, haloxyfop-P, hexazinone, imazamethapyr, imazapyr, imazaquin, imazethabenz, imazethapyr, imazosulfuron, ioxynil, isocarbamid, isopropalin, isoproturon, isouron, isoxaben, isoxapyrifop, karbutilate, lactofen, lenacil, linuron, maleic hydrazide, MCPA, MCPB, mecoprop, mecoprop-P, mefenacet, mefluidide, metamitron, metazachlor, methabenzthiazuron, methazole, metobenzuron, metolachlor, metosulam, metoxuron, metribuzin, metsulfuron, minoterb, molinate, monalide, monolinuron, monuron, napropamide, naproanilide, naptalam, NCC 330, neburon, nicosulfuron, nipyraclofen, nitralin, nitrofen, nitrofluorfen, norflurazon, orbencarb, oryzalin, oxadiargyl, oxadiazon, oxyfluorfen, paraquat, pebulate, pendimethalin, perfluidone, phenisopham, phenmedipham, picloram, piperophos, PPG-1013, pretilachlor, primisulfuron, procyazine, prodiamine, profluralin, prometon, prometryn, propyzamide, propachlor, propanil, propaquizafop, propazine, propham, prosulfocarb, prosulfuron, prynachlor, pyrazolate, pyrazosulfuron, pyrazoxyfen, pyributicarb, pyridate, pyrithiobac, quinclorac, quinmerac, quizalofop, quizalofop-P, rimsulfuron, secbumeton, siduron, simazine, simetryn, sulcotrione, sulfallate, sulfentrazone, sulfometuron-methyl, sulfosate, tebuthiuron, terbacil, terbucarb, terbuchlor, terbumeton, terbuthylazine, terbutryn, thiazopyr, thidiazimin, thifensulfuron-methyl, thiobencarb, tiocarbazil, triallate, triasulfuron, triazofenamid, tribenuron, triclopyr, tridiphane, trietazine, trifluralin, triflusulfuron, trimeturon, vernolate, xylachlor or mixtures of these. The co-herbicides can be water-soluble or water-insoluble.

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☐ 1. Document ID: US 20010016956 A1

L24: Entry 1 of 16 File: PGPB Aug 23, 2001

PGPUB-DOCUMENT-NUMBER: 20010016956
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010016956 A1

TITLE: Herbicide-tolerant protox genes produced by DNA shuffling

PUBLICATION-DATE: August 23, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Ward, Eric R.	Durham	NC	US	
Volrath, Sandra L.	Durham	NC	US	
Johnson, Marie A.	Wendell	NC	US	
Potter, Sharon L.	Raleigh	NC	US	

US-CL-CURRENT: 800/300; 435/91.1, 536/23.6

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

☐ 2. Document ID: US 6288306 B1

L24: Entry 2 of 16 File: USPT Sep 11, 2001

US-PAT-NO: 6288306
DOCUMENT-IDENTIFIER: US 6288306 B1

TITLE: Methods of selecting plants, plant tissue or plant cells resistant to a protoporphyrinogen oxidase inhibitor

DATE-ISSUED: September 11, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ward; Eric R.	Basel	N/A	N/A	CHX
Volrath; Sandra	Durham	NC	N/A	N/A

US-CL-CURRENT: 800/300; 435/413, 435/419, 800/278

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

☐ 3. Document ID: US 6282837 B1

L24: Entry 3 of 16 File: USPT Sep 4, 2001

US-PAT-NO: 6282837
DOCUMENT-IDENTIFIER: US 6282837 B1

TITLE: Methods of controlling the growth of undesired vegetation with herbicide tolerant plants or plant seeds having altered protoporphyrinogen oxidase activity

DATE-ISSUED: September 4, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ward; Eric R.	Basel	N/A	N/A	CHX
Volrath; Sandra	Durham	NC	N/A	N/A

US-CL-CURRENT: 800/300

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw Desc | Image

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☐ 4. Document ID: US 6177245 B1

L24: Entry 4 of 16 File: USPT Jan 23, 2001

US-PAT-NO: 6177245
DOCUMENT-IDENTIFIER: US 6177245 B1

TITLE: Manipulation of protoporphyrinogen oxidase enzyme activity in eukaryotic organisms

DATE-ISSUED: January 23, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ward; Eric R.	Basel	N/A	N/A	CHX
Volrath; Sandra	Durham	NC	N/A	N/A

US-CL-CURRENT: 435/6; 536/23.1, 536/24.3, 536/24.31, 536/24.32

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw Desc | Image

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☑ 5. Document ID: US 6127318 A

L24: Entry 5 of 16 File: USPT Oct 3, 2000

US-PAT-NO: 6127318
DOCUMENT-IDENTIFIER: US 6127318 A

TITLE: Combination of glyphosate and a triazolinone herbicide

DATE-ISSUED: October 3, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sato; Tatsuo	Chofu	N/A	N/A	JPX
Kuchikata; Masuo	Ryugasaki	N/A	N/A	JPX
Yong-Man; Yoo	Kyungjoo	N/A	N/A	KRX
Cearnal; Kathleen S.	Florissant	MO	N/A	N/A
Killmer; John L.	Warson Woods	MO	N/A	N/A

US-CL-CURRENT: 504/128

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Drawi Desc | Image

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☐ 6. Document ID: US 6084155 A

L24: Entry 6 of 16 File: USPT Jul 4, 2000

US-PAT-NO: 6084155
DOCUMENT-IDENTIFIER: US 6084155 A

TITLE: Herbicide-tolerant protoporphyrinogen oxidase ("protox") genes

DATE-ISSUED: July 4, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Volrath; Sandra L.	Durham	NC	N/A	N/A
Johnson; Marie A.	Raleigh	NC	N/A	N/A
Ward; Eric R.	Durham	NC	N/A	N/A
Heifetz; Peter B.	Durham	NC	N/A	N/A

US-CL-CURRENT: 800/300; 435/320.1, 435/419, 435/440, 536/23.2, 536/23.6, 800/306, 800/312, 800/314, 800/317.3, 800/320, 800/320.1, 800/320.2, 800/320.3

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Drawi Desc | Image

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☐ 7. Document ID: US 6023012 A

L24: Entry 7 of 16 File: USPT Feb 8, 2000

US-PAT-NO: 6023012
DOCUMENT-IDENTIFIER: US 6023012 A

TITLE: DNA molecules encoding plant protoporphyrinogen oxidase

DATE-ISSUED: February 8, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Volrath; Sandra L.	Durham	NC	N/A	N/A
Johnson; Marie A.	Raleigh	NC	N/A	N/A
Potter; Sharon L.	Raleigh	NC	N/A	N/A
Ward; Eric R.	Durham	NC	N/A	N/A
Heifetz; Peter B.	Durham	NC	N/A	N/A

US-CL-CURRENT: 800/300

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw Desc | Image

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☐ 8. Document ID: US 6018105 A

L24: Entry 8 of 16 File: USPT Jan 25, 2000

US-PAT-NO: 6018105
DOCUMENT-IDENTIFIER: US 6018105 A

TITLE: Promoters from plant protoporphyrinogen oxidase genes

DATE-ISSUED: January 25, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Johnson; Marie A.	Raleigh	NC	N/A	N/A
Volrath; Sandra L.	Durham	NC	N/A	N/A
Ward; Eric R.	Durham	NC	N/A	N/A

US-CL-CURRENT: 800/298; 435/320.1, 435/419, 536/24.1

Full | Title | Citation | Front | Review | Classification | Date | Reference | KWIC | Draw Desc | Image

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☐ 9. Document ID: US 5939602 A

L24: Entry 9 of 16 File: USPT Aug 17, 1999

US-PAT-NO: 5939602
DOCUMENT-IDENTIFIER: US 5939602 A

TITLE: DNA molecules encoding plant protoporphyrinogen oxidase and inhibitor-resistant mutants thereof

DATE-ISSUED: August 17, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Volrath; Sandra L.	Durham	NC	N/A	N/A
Johnson; Marie A.	Raleigh	NC	N/A	N/A
Ward; Eric R.	Durham	NC	N/A	N/A
Heifetz; Peter B.	Durham	NC	N/A	N/A

US-CL-CURRENT: 800/300; 435/320.1, 435/419, 435/440, 435/468, 536/23.2, 536/23.6, 800/278

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

☑ 10. Document ID: US H001764 H

L24: Entry 10 of 16 File: USPT Dec 1, 1998

US-PAT-NO: H001764
DOCUMENT-IDENTIFIER: US H001764 H

TITLE: Use of benzyluracils for controlling weeds in cereal crops

DATE-ISSUED: December 1, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hotzman; Frederick W.	Morrisville	PA	N/A	N/A
Bahr; James T.	Hopewell	NJ	N/A	N/A

US-CL-CURRENT: 504/243

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

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l4 and l23	16

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Display Format: CIT Change Format

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☐ 11. Document ID: US 5767373 A

L24: Entry 11 of 16 File: USPT Jun 16, 1998

US-PAT-NO: 5767373
DOCUMENT-IDENTIFIER: US 5767373 A

TITLE: Manipulation of protoporphyrinogen oxidase enzyme activity in eukaryotic organisms

DATE-ISSUED: June 16, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ward; Eric R.	Basel	N/A	N/A	CHX
Volrath; Sandra	Durham	NC	N/A	N/A

US-CL-CURRENT: 800/300; 435/418, 435/419, 435/69.1, 536/23.6, 800/298, 800/300.1, 800/306, 800/312, 800/314, 800/317.3

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw. Desc | Image

☐ 12. Document ID: US 5407808 A

L24: Entry 12 of 16 File: USPT Apr 18, 1995

US-PAT-NO: 5407808
DOCUMENT-IDENTIFIER: US 5407808 A

TITLE: Method and composition for photodynamic treatment and detection of tumors

DATE-ISSUED: April 18, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Halling; Blaik P.	Yardley	PA	N/A	N/A
Yuhas; Debra A.	Parlin	NJ	N/A	N/A

US-CL-CURRENT: 435/34; 424/9.61, 435/189, 435/25, 436/63, 436/64, 436/813, 514/410

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw. Desc | Image

☐ 13. Document ID: US 5298502 A

L24: Entry 13 of 16 File: USPT Mar 29, 1994

US-PAT-NO: 5298502
DOCUMENT-IDENTIFIER: US 5298502 A

TITLE: Method and composition for photodynamic treatment and detection of tumors

DATE-ISSUED: March 29, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Halling; Blaik P.	Yardley	PA	N/A	N/A
Witkowski; Debra A.	Parlin	NJ	N/A	N/A

US-CL-CURRENT: 514/185; 514/229.2, 514/258, 514/300, 514/312, 514/384, 514/410

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Image

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☐ 14. Document ID: CZ 200100558 A3, WO 200008936 A1, AU 9957321 A, DE 19919993 A1, BR 9913638 A, EP 1104243 A1

L24: Entry 14 of 16 File: DWPI Jun 13, 2001

DERWENT-ACC-NO: 2000-224122
DERWENT-WEEK: 200138

TITLE: Control of weeds in tolerant maize crops uses herbicidal combination containing glufosinate, glyphosate, imidazolinone, azole, cyclohexanedione or heteroaryloxyphenoxypropionic acid herbicide

INVENTOR: BIERINGER, H; HACKER, E ; WILLMS, L

PRIORITY-DATA: 1999DE-1019993 (April 30, 1999), 1998DE-1036737 (August 13, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
CZ 200100558 A3	June 13, 2001	N/A	000	A01N057/20
WO 200008936 A1	February 24, 2000	G	069	A01N057/20
AU 9957321 A	March 6, 2000	N/A	000	A01N057/20
DE 19919993 A1	November 2, 2000	N/A	000	A01N057/20
BR 9913638 A	May 22, 2001	N/A	000	A01N057/20
EP 1104243 A1	June 6, 2001	G	000	A01N057/20

INT-CL (IPC): A01N 33/18; A01N 43/50; A01N 57/20; A01N 33/18; A01N 37/22; A01N 37/40; A01N 39/04; A01N 41/10; A01N 43/10 ; A01N 43/40; A01N 43/50; A01N 43/70; A01N 43/80; A01N 43/824; A01N 43/90; A01N 47/06; A01N 47/36; A01N 57/20; A01N 37/22; A01N 37/40; A01N 39/04; A01N 41/10; A01N 43/10; A01N 43/40; A01N 43/50; A01N 43/70 ; A01N 43/80; A01N 43/824; A01N 43/90; A01N 47/06; A01N 47/36; A01N 57/20; A01N 57/20; A01N 47/36; A01N 47/06; A01N 43/90; A01N 43/824; A01N 43/80; A01N 43/70; A01N 43/50; A01N 43/40; A01N 43/10; A01N 41/10; A01N 39/04; A01N 37/40; A01N 37/22; A01N 33/18

Full | Title | Citation | Front | Review | Classification | Date | Reference KWIC | Draw Desc | Clip Img | Image

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☐ 15. Document ID: CZ 200100555 A3, DE 19836700 A1, WO 200008940 A1, AU 9955128 A, BR 9913006 A, EP 1104992 A1

L24: Entry 15 of 16 File: DWPI Jun 13, 2001

DERWENT-ACC-NO: 2000-206888
DERWENT-WEEK: 200138

TITLE: Use of a synergistic herbicide combination including a glufosinate- or glyphosate-type, imidazolinone or protoporphyrinogen oxidase inhibitory azole herbicide to control weeds in cereals

INVENTOR: BIERINGER, H; HACKER, E ; WILLMS, L

PRIORITY-DATA: 1998DE-1036700 (August 13, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
CZ 200100555 A3	June 13, 2001	N/A	000	A01N057/20
DE 19836700 A1	February 17, 2000	N/A	016	A01N057/20
WO 200008940 A1	February 24, 2000	G	000	A01N057/20
AU 9955128 A	March 6, 2000	N/A	000	A01N057/20
BR 9913006 A	May 8, 2001	N/A	000	A01N057/20
EP 1104992 A1	June 13, 2001	G	000	A01N057/20

INT-CL (IPC): A01N 33/18; A01N 57/20; A01N 33/18; A01N 37/32; A01N 37/40; A01N 39/02; A01N 39/04; A01N 43/40; A01N 43/50 ; A01N 43/653; A01N 43/824; A01N 47/30; A01N 47/36; A01N 57/20; A01N 37/32; A01N 37/40; A01N 39/02; A01N 39/04; A01N 43/40; A01N 43/50; A01N 43/653; A01N 43/824; A01N 47/30; A01N 47/36; A01N 57/20; A01N 57/20; A01N 47/36; A01N 47/30; A01N 43/824; A01N 43/653; A01N 43/50; A01N 43/40; A01N 39/04; A01N 39/02; A01N 37/40; A01N 37/32; A01N 33/18

Full | Title | Citation | Front | Review | Classification | Date | Reference
KWIC | Draw Desc | Clip Img | Image

☐ 16. Document ID: BR 9913640 A, DE 19836660 A1, WO 200008934 A1, AU 9956205 A, EP 1107667 A1

L24: Entry 16 of 16 File: DWPI Jun 5, 2001

DERWENT-ACC-NO: 2000-206882
DERWENT-WEEK: 200138

TITLE: Use of a synergistic herbicide combination including a glufosinate- or glyphosate-type, imidazolinone or protoporphyrinogen oxidase inhibitory azole herbicide to control weeds in soya

INVENTOR: BIERINGER, H; HACKER, E ; WILLMS, L

PRIORITY-DATA: 1998DE-1036660 (August 13, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
BR 9913640 A	June 5, 2001	N/A	000	A01N057/20
DE 19836660 A1	February 17, 2000	N/A	014	A01N057/20
WO 200008934 A1	February 24, 2000	G	000	A01N057/20
AU 9956205 A	March 6, 2000	N/A	000	A01N057/20
EP 1107667 A1	June 20, 2001	G	000	A01N057/20

INT-CL (IPC): A01N 33/18; A01N 57/20; C07F 9/38; C07F 9/46; A01N 37/22; A01N 37/38; A01N 37/48; A01N 43/10; A01N 43/40; A01N 43/50; A01N 43/653; A01N 43/76; A01N 43/88; A01N 43/90; A01N 47/30; A01N 47/36; A01N 47/38; A01N 57/20; A01N 57/20; A01N 47/38; A01N 47/36; A01N 47/30; A01N 43/90; A01N 43/88; A01N 43/76; A01N 43/653; A01N 43/50; A01N 43/40; A01N 43/10; A01N 37/48; A01N 37/38; A01N 37/22; A01N 33/18

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L24: Entry 5 of 16 File: USPT Oct 3, 2000

DOCUMENT-IDENTIFIER: US 6127318 A
TITLE: Combination of glyphosate and a triazolinone herbicide

ABPL:
A composition comprising N-(phosphonomethyl)glycine or a salt thereof and a triazolinone herbicide is described. The composition can optionally comprise inert ingredients such as a surfactant, an emulsifier, a solvent, or a carrier. Triazolinone herbicides of particular interest in this composition include carfentrazone-ethyl and sulfentrazone.

BSPR:
Protoporphyrinogen oxidase inhibitor (PPO) herbicides are known to affect plants by inhibiting protoporphyrinogen oxidase in chloroplasts, thereby damaging photosynthesis and other processes. This damage causes early symptoms of tissue necrosis in plants. Some PPO herbicides such as the triazolinones (see, for example, U.S. Pat. No. 5,217,520, herein incorporated by reference) provide good control of broadleaf weeds but are less efficacious in controlling grasses.

BSPR:
Japanese Patent Application Publication Kokai Hei 10-45516 (herein incorporated by reference) describes a composition comprising N-(phosphonomethyl)glycine and a PPO herbicide known as carfentrazone. Carfentrazone is a high-melting solid carboxylic acid useful for postemergent control primarily of broadleaf weeds (U.S. Pat. No. 5,217,520, herein incorporated by reference).

BSPR:
meant to include an internal salt, i.e., a zwitterion. A preferred embodiment of the present invention provides a combination of N-(phosphonomethyl)glycine or a salt thereof with carfentrazone-ethyl. Another embodiment of the present invention provides a combination of N-(phosphonomethyl)glycine or a salt thereof with sulfentrazone.

BSPR:
"Carfentrazone" means
.alpha.,2-dichloro-5-(4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl)-4-fluorobenzenepropionic acid, CAS Registry Number 128621-72-7, or salts thereof.

BSPR:
"Carfentrazone-ethyl" means ethyl
.alpha.,2-dichloro-5-(4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl)-4-fluorobenzenepropionate, CAS Registry Number 128639-02-1.

BSPR:
"Sulfentrazone" means
N-(2,4-dichloro-5-(4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl)phenyl)methanesulfonamide, CAS Registry Number 122836-35-5.

BSPR:
When R.sup.3 is --NHSO.sub.2 R.sup.5 then the triazolinone herbicide is a triazolinone sulfonamide herbicide. Another particularly preferred triazolinone herbicide is sulfentrazone (formula (IV)). ##STR4##

BSPR:
For example, a wettable powder composition can comprise N-(phosphonomethyl)glycine or a salt thereof, the triazolinone herbicide, a surfactant as described above, and optionally a solid carrier as described above. The wettable powder can further comprise other inert ingredients such as an

anti-caking agent, a defoaming agent, a disintegration agent, a binder, a spreader, or other materials. One method of preparing the wettable powder can comprise mixing about 5 to about 85 parts by weight of a triazolinone herbicide such as carfentrazone-ethyl or sulfentrazone with about 1 to about 30 parts by weight of a surfactant such as tallowamine ethoxylate. An inert carrier (about 5 to about 85 parts by weight) such as silica or ammonium sulfate can be mixed, for example in a high-shear blender, with about 5 to about 85 parts by weight of the acid equivalent of powdered N-(phosphonomethyl)glycine or a powdered solid salt of N-(phosphonomethyl)glycine such as N-(phosphonomethyl)glycine monoammonium salt. The surfactant/triazolinone herbicide mixture can then be added to the powder mixture under high shear, resulting in a wettable powder. Other inert ingredients can optionally be added.

BSPR:
The combination of the present invention can also take the form of a composition comprising a water dispersible granule formulation or a water soluble granule formulation. For example, one can prepare a triazolinone herbicide dispersion by mixing about 1 to about 85 parts by weight (preferably about 1 to about 70 parts by weight, more preferably about 2 to about 50 parts by weight, and still more preferably about 2 to about 30 parts by weight) of the triazolinone herbicide such as carfentrazone-ethyl or sulfentrazone with about 1 to about 30 parts by weight (preferably about 1 to about 20 parts by weight and more preferably about 1 to about 10 parts by weight) of a surfactant such as an alkoxylated acetylenic diol surfactant or a polyoxyalkylene alkyl ether surfactant. Optionally the triazolinone herbicide dispersion can contain a solvent such as a phosphate solvent or an aromatic solvent. The triazolinone herbicide dispersion can be mixed, for example by kneading, with about 5 to about 85 parts by weight (preferably about 10 to about 70 parts by weight, more preferably about 10 to about 60 parts by weight, and still more preferably about 20 to about 45 parts by weight) of the acid equivalent of powdered N-(phosphonomethyl)glycine or with a powdered solid salt of N-(phosphonomethyl)glycine such as ammonium N-(phosphonomethyl)glycine salt such that the resulting mixture is a dough. Other inert ingredients such as ammonium sulfate, a spreading agent such an alkoxylated organosilicone surfactant, a defoaming agent, an extrusion aid, a binder, or an inorganic carrier such as silica can optionally be added. The dough can optionally be shaped, for example by extrusion or by molding, and dried to form the water dispersible granule formulation.

BSPR:
For example, the triazolinone herbicide can be dispersed in a mixture comprising the alkoxylated acetylenic diol surfactant, the polyoxyalkylene alkyl ether surfactant, an alkoxylated organosilicone surfactant, and a solvent such as a phosphate solvent. These ingredients can be further mixed with N-(phosphonomethyl)glycine or a salt thereof to form a dough. The weight ratio of N-(phosphonomethyl)glycine or salt thereof to the triazolinone herbicide can vary over a wide range. Typically the weight ratio of N-(phosphonomethyl)glycine or salt thereof expressed as an acid equivalent to the triazolinone herbicide can in the range of about 1:1 to about 100:1, preferably about 2:1 to about 75:1, more preferably about 5:1 to about 50:1, and still more preferably about 10:1 to about 40:1. Preferably the triazolinone herbicide is carfentrazone-ethyl or sulfentrazone. Optionally, the mixture in which the triazolinone herbicide is dispersed further comprises a second solvent such as an aromatic solvent or an aliphatic solvent. The solid herbicidal composition can further optionally comprise a carrier such as silica, alumina, clay, ammonium sulfate, or cellulose. A preferred carrier is ammonium sulfate. The composition can also comprise a nitrite scavenger such as sodium sulfite. The solid herbicidal composition can be prepared, for example, as a wettable powder or as a water dispersible granule.

BSPR:
In a preferred embodiment of the present invention, the composition is an emulsion comprising (a) an aqueous phase comprising the mono(isopropylammonium) salt of N-(phosphonomethyl)glycine), an ethoxylated alkylamine surfactant, sodium sulfite, propylene glycol, and water; and (b) an hydrophobic phase comprising carfentrazone-ethyl, an aromatic solvent, calcium dodecylbenzenesulfonate, a nonionic surfactant, and a silicone defoamer; and wherein the hydrophobic phase is dispersed in the aqueous phase to form an emulsion.

BSPR:
An alternative method of preparing a dilute aqueous mixture is to prepare a concentrated formulation of the triazolinone herbicide and separately prepare a concentrated formulation of N-(phosphonomethyl)glycine or a salt thereof. Then

the concentrated triazolinone herbicide formulation and the N-(phosphonomethyl)glycine formulation can be mixed together with water or with another carrier or diluent. A triazolinone herbicide formulation useful for this application can for example comprise a triazolinone (such as carfentrazone-ethyl or sulfentrazone), a solvent, and a surfactant.

BSPR:
In another embodiment the present invention provides a method of treating plants wherein the method comprises contacting foliage of a plant with a biologically effective amount of a composition comprising N-(phosphonomethyl)glycine or a salt thereof, and a triazolinone herbicide such as that encompassed by formula (II), including carfentrazone-ethyl or sulfentrazone. The composition of the present invention should be applied to plants at a rate sufficient to give the desired biological effect. These application rates are usually expressed as amount of herbicide per unit area treated, e.g., grams of active ingredient or of acid equivalent per hectare (g/ha). What constitutes a "desired effect" varies according to the standards and practice of those who investigate, develop, market, and use a specific class of herbicides. For example, the amount of herbicide applied per unit area to give 85% control of a plant species as measured by growth reduction or mortality is often used to define a commercially effective rate.

BSPL:
R.sup.1 is preferably difluoromethyl. R.sup.2 is preferably lower alkyl, more preferably C.sub.1 to about C.sub.5 alkyl, and more preferably still it is methyl. Preferably R.sup.4 is alkyl or alkoxy, more preferably R.sup.4 is alkyl, still more preferably R4 is C.sub.1 to about C.sub.5 alkyl, and more preferably still R.sup.4 is ethyl. R.sup.5 is preferably alkyl, more preferably C.sub.1 to about C.sub.5 alkyl, and still more preferably R.sup.5 is methyl. X is preferably a halogen and more preferably X is fluoro or chloro. Y is preferably a halogen and more preferably Y is chloro. When R.sup.3 is --CH.sub.2 CHClCO.sub.2 R.sup.4 then the triazolinone herbicide is a triazolinone acid ester herbicide. A particularly preferred triazolinone herbicide is carfentrazone-ethyl (formula (III)). ##STR3##

DEPR:
Charge a 2 liter vessel with 62.5 g of technical grade carfentrazone-ethyl, 385 g of polyoxyethylenepolyoxypropylene-2-ethylhexyl ether (Newkalgen 4016EHB, comprising about 15 moles of ethylene oxide and about 15 moles of propylene oxide per mole of surfactant, available from Takemoto Oil and Fat Co. Ltd., Gamagori, Aichi 443, Japan), 220.5 g of Silwet L-77 (an organosilicone surfactant available from OSi Specialties, Inc., Danbury, Conn., U.S.A.), 166 g of Surfynol 465 (a alkoxylated acetylenic diol surfactant available from Air Products, Inc., Allentown, Pa., U.S.A.), and 166 g of trixylenyl phosphate. Gently heat the vessel in a water bath. Stir the mixture for about 30 minutes at about 80.degree. C.

DEPR:
Mix the carfentrazone-ethyl solution with 1280 g of 86% by weight (acid equivalent) monoammonium salt of N-(phosphonomethyl)glycine and 2720 g of ammonium sulfate, in a kneader. Mix the mixture with 150 g of water for about 10 minutes at room temperature. Knead the mixture for about 30 minutes to make an extrudable dough. Extrude the dough through a screen having 1 mm openings, intended for lateral (radial) extrusion. Dry the resulting granules using an electric fan dryer at 70.degree. C. for one hour. The composition of the final granule will be as follows:

DEPR:
Charge a 2 liter vessel with 103.5 g of technical grade carfentrazone-ethyl, 332.5 g of polyoxyethylenepolyoxypropylene-2-ethylhexyl ether (Newkalgen 4016EHB, comprising about 15 moles of ethylene oxide and about 15 moles of propylene oxide per mole of surfactant), 47.5 g of Silwet L-77, 379 g of Surfynol 465, 190 g of trixylenyl phosphate, 24 g of phenylxylylethane, 21.5 g of bis(.alpha.-methylbenzyl)xylene, and 2 g of xylene based solvents. Gently heat the vessel in a water bath. Stir the mixture for about 30 minutes at about 80.degree. C.

DEPR:
Mix the carfentrazone-ethyl solution with 2100 g of 86% by weight (acid equivalent) monoammonium salt of N-(phosphonomethyl)glycine and 1800 g of ammonium sulfate, in a kneader. Mix the mixture with 150 g of water for about 10

minutes at room temperature. Knead the mixture for about 30 minutes to make an extrudable dough. Extrude the dough through a screen having 1 mm openings, intended for lateral (radial) extrusion. Dry the resulting granules using an electric fan dryer at 70.degree. C. for one hour. The composition of the final granule will be as follows:

DEPR:
Charge a 2 liter vessel with 62.5 g of technical grade carfentrazone-ethyl, 385 g of polyoxyethylenepolyoxypropylene-2-ethylhexyl ether (Newkalgen 4016EHB, comprising about 15 moles of ethylene oxide and about 15 moles of propylene oxide per mole of surfactant), 220.5 g of Silwet L-77, 166 g of Surfynol 465, and 166 g of trixylenyl phosphate. Gently heat the vessel in a water bath. Stir the mixture for about 30 minutes at about 80.degree. C.

DEPR:
Mix the carfentrazone-ethyl solution with 2100 g of 86% by weight (acid equivalent) monoammonium salt of N-(phosphonomethyl)glycine and 1900 g of ammonium sulfate, in a kneader. Mix the mixture with 150 g of water for about 10 minutes at room temperature. Knead the mixture for about 30 minutes to make an extrudable dough. Extrude the dough through a screen having 1 mm openings, intended for lateral (radial) extrusion. Dry the resulting granules using an electric fan dryer at 70.degree. C. for one hour. The composition of the final granule will be as follows:

DEPR:
Charge a 2 liter vessel with 62.5 g of technical grade carfentrazone-ethyl, 385 g of polyoxyethylenepolyoxypropylene-2-ethylhexyl ether (Newkalgen 4016EHB, comprising about 15 moles of ethylene oxide and about 15 moles of propylene oxide per mole of surfactant), 220.5 g of Silwet L-77, 166 g of Surfynol 465, and 166 g of trixylenyl phosphate. Gently heat the vessel in a water bath. Stir the mixture for about 30 minutes at about 80.degree. C.

DEPR:
Mix the carfentrazone-ethyl solution with 4000 g of 86% by weight (acid equivalent) monoammonium salt of N-(phosphonomethyl)glycine, in a kneader. Mix the mixture with 150 g of water for about 10 minutes at room temperature. Knead the mixture for about 30 minutes to make an extrudable dough. Extrude the dough through a screen having 1 mm openings, intended for lateral (radial) extrusion. Dry the resulting granules using an electric fan dryer at 70.degree. C. for one hour. The composition of the final granule will be as follows:

DEPR:
Charge a 2 liter vessel with 101 g of technical grade carfentrazone-ethyl, 330 g of polyoxyethylenepolyoxypropylene-2-ethylhexyl ether (Newkalgen 4016EHB, comprising about 15 moles of ethylene oxide and about 15 moles of propylene oxide per mole of surfactant), 47.5 g of Silwet L-77, 375 g of Surfynol 465, 47.5 g of xylene based solvent mix, and 190 g of 2-ethylhexyl diphenyl phosphate. Gently heat the vessel in a water bath. Stir the mixture for about 30 minutes at about 80.degree. C.

DEPR:
Mix the carfentrazone-ethyl solution with 2117.5 g of 86% by weight (acid equivalent) monoammonium salt of N-(phosphonomethyl)glycine and 1766.5 g of ammonium sulfate, in a kneader. Mix the mixture with 150 g of water for about 10 minutes at room temperature. Knead the mixture for about 30 minutes to make an extrudable dough. Extrude the dough through a screen having 1 mm openings, intended for lateral (radial) extrusion. Dry the resulting granules using an electric fan dryer at 70.degree. C. for one hour. The composition of the final granule will be as follows:

DEPR:
A 4 liter vessel is charged with 64 g of technical grade carfentrazone-ethyl, 560 g of polyoxyethylenepolyoxypropylene-2-ethylhexyl ether (Newkalgen 4016EHB, comprising about 15 moles of ethylene oxide and about 15 moles of propylene oxide per mole of surfactant), 40 g of Epan U-108 (a polyoxyethylenepolyoxypropylene ether nonionic surfactant available from Dai-Ichi Kogyo Seiyaku Co., Ltd., Tokyo, Japan), 40 g of Silwet L-77, 320 g of Surfynol 465, 40 g of Sorpol 7537 (a solvent from Toho Chemical Industries, Tokyo, Japan), and 240 g of 2-ethylhexyl diphenyl phosphate (available from Monsanto Company, St. Louis, Mo., U.S.A.). The vessel is gently heated in a water bath. The mixture is stirred for about 30 minutes at about 80.degree. C.

DEPR:
The carfentrazone-ethyl solution is mixed with 2176 g of 94% by weight (acid equivalent) monoammonium salt of N-(phosphonomethyl)glycine, 4216 g of ammonium sulfate, and 24 g of Emul 10 powder (sodium lauryl sulfate, available from Kao Corp., Tokyo, Japan) in a kneader. The mixture is mixed with 250 g of water for about 10 minutes at room temperature. The mixture is kneaded for about 30 minutes to make an extrudable dough. The dough is extruded through a screen having 1 mm openings, intended for lateral (radial) extrusion. The resulting granules are dried using an electric fan dryer at 70.degree. C. for one hour. The composition of the final granule is as follows:

DEPR:
A 20 mL beaker was charged with 1.25 g of technical grade carfentrazone-ethyl, 5.0 g of polyoxyethylenepolyoxypropylene-2-ethylhexyl ether (Newkalgen 4016EHB, comprising about 15 moles of ethylene oxide and about 15 moles of propylene oxide per mole of surfactant) and 3.0 g of Surfynol 465 (a alkoxylated acetylenic diol surfactant available from Air Products, Inc., Allentown, Pa., U.S.A.). The vessel was gently heated in a water bath. The mixture was stirred by hand for about 10 minutes at about 80.degree. C.

DEPR:
The carfentrazone-ethyl solution was mixed with 25.6 g of 86% by weight (acid equivalent) monoammonium salt of N-(phosphonomethyl)glycine and 65.15 g of ammonium sulfate, in a mortar. The mixture was mixed with 7.0 g of water for about 5 minutes by hand at room temperature. The mixture was kneaded for about 10 minutes by hand to make an extrudable dough. The dough was extruded through a screen having 1 mm openings, intended for lateral (radial) extrusion. The resulting granules were dried using an electric fan dryer at 70.degree. C. for one hour. The composition of the final granule was as follows:

DEPR:
A 20 mL beaker was charged with 1.25 g of technical grade carfentrazone-ethyl, 5.0 g of polyoxyethylenepolyoxypropylene-2-ethylhexyl ether (Newkalgen 4016EHB, comprising about 15 moles of ethylene oxide and about 15 moles of propylene oxide per mole of surfactant), 0.5 g of Silwet L-77, 3.0 g of Surfynol 465, and 1.0 g of Takemoto 98122TX (polyoxyethylene(4 moles)-2,4,6-tristyrylphenyl ether of Takemoto Oil & Fat Ind. Co. Ltd., Japan). The beaker was gently heated in a water bath. The mixture was stirred by hand for about 5 minutes at about 80.degree. C.

DEPR:
The carfentrazone-ethyl solution was mixed with 25.6 g of 86% by weight (acid equivalent) monoammonium salt of N-(phosphonomethyl)glycine and 63.65 g of ammonium sulfate, in a mortar. The mixture was mixed with 7.0 g of water for about 5 minutes by hand at room temperature. The mixture was kneaded for about 5 minutes by hand to make an extrudable dough. The dough was extruded through a screen having 1 mm openings, intended for lateral (radial) extrusion. The resulting granules were dried using an electric fan dryer at 70.degree. C. for one hour. The composition of the final granule was as follows:

DEPR:
A 20 mL beaker was charged with 1.25 g of technical grade carfentrazone-ethyl, 5.0 g of polyoxyethylenepolyoxypropylene-2-ethylhexyl ether (Newkalgen 4016EHB, comprising about 15 moles of ethylene oxide and about 15 moles of propylene oxide per mole of surfactant), 3.0 g of Surfynol 465, and 1.0 g of alkylbenzene derivative solvent. The beaker was gently heated in a water bath. The mixture was stirred by hand for about 5 minutes at about 80.degree. C.

DEPR:
The carfentrazone-ethyl solution was mixed with 25.6 g of 86% by weight (acid equivalent) monoammonium salt of N-(phosphonomethyl)glycine and 64.15 g of ammonium sulfate, in a mortar. The mixture was mixed with 7.0 g of water for about 5 minutes by hand at room temperature. The mixture was kneaded for about 5 minutes by hand to make an extrudable dough. The dough was extruded through a screen having 1 mm openings, intended for lateral (radial) extrusion. The resulting granules were dried using an electric fan dryer at 70.degree. C. for one hour. The composition of the final granule was as follows:

DEPR:
Add 2.92 g of 95% carfentrazone-ethyl to 6.00 g of Aromatic 200 solvent (a C.sub.9 aromatic solvent blend having a flashpoint of greater than 93.degree. C.,

and sold by Exxon Corp., Houston, Tex., U.S.A.). Add to this mixture 2.00 g of Armul 1496 HF (a surfactant blend available from Witco Corp., Perth Amboy, N.J., U.S.A.) and 2.00 g Armul 1505 HF (a surfactant blend available from Witco Corp.). Mix until homogeneous.

DEPR:
Agitate the mono(isopropylammonium) N-(phosphonomethyl)glycine pre-mix under high shear and to it slowly add the carfentrazone-ethyl premix. Continue mixing for about five minutes. Then add the xanthan gum premix to the stirred mixture. Continue mixing gently until homogeneous. The resulting mixture will be an emulsion formulation of mono(isopropylammonium) N-(phosphonomethyl)glycine and carfentrazone-ethyl. The final composition of the emulsion will be as follows:

DEPR:
Add 2.45 g of 95% carfentrazone-ethyl to 25.00 g of Aromatic 200 solvent (a C.sub.9 aromatic solvent blend having a flashpoint of greater than 93.degree. C., and sold by Exxon Corp., Houston, Tex., U.S.A.). Add to this mixture 5.00 g of Armul 1496/1505HF (an calcium dodecylbenzene sulfonate/nonionic surfactant blend available from witco Corp., Perth Amboy, N.J., U.S.A.). Further add to this mixture 0.1 g of Mazu 100DS (a silicone defoamer available from PPG Industries/Specialty Chemicals, Gurnee, Ill., U.S.A.). Next add 2.00 g of Aerosil 200 fumed silica (available from Degussa Corp., Ridgefield Park, N.J., U.S.A.). Mix under high shear (for example, in a Waring blender) until homogeneous.

DEPR:
Agitate the mono(isopropylammonium) N-(phosphonomethyl)glycine pre-mix under high shear (for example, in a Waring blender) and to it slowly add the carfentrazone-ethyl premix. Continue mixing for about five minutes. Continue mixing gently until homogeneous. The resulting mixture will be an emulsion formulation of mono(isopropylammonium) N-(phosphonomethyl)glycine and carfentrazone-ethyl. The final composition of the emulsion will be as follows:

DEPR:
Add 2.45 g of 95% carfentrazone-ethyl to 25.00 g of Aromatic 200 solvent (a C.sub.9 aromatic solvent blend having a flashpoint of greater than 93.degree. C., and sold by Exxon Corp., Houston, Tex., U.S.A.). Add to this mixture 5.00 g of Armul 1496/1505HF (an calcium dodecylbenzene sulfonate/nonionic surfactant blend available from Witco Corp., Perth Amboy, N.J., U.S.A.). Further add to this mixture 0.1 g of Mazu 100DS (a silicone defoamer available from PPG Industries/Specialty Chemicals, Gurnee, Ill., U.S.A.). Next add 2.00 g of Aerosil 200 fumed silica (available from Degussa Corp., Ridgefield Park, N.J., U.S.A.). Mix under high shear (for example, in a Waring blender) until homogeneous.

DEPR:
Agitate the mono(isopropylammonium) N-(phosphonomethyl)glycine pre-mix under high shear (for example, in a Waring blender) and to it slowly add the carfentrazone-ethyl premix. Continue mixing for about five minutes. Continue mixing gently until homogeneous. The resulting mixture will be an emulsion formulation of mono(isopropylammonium) N-(phosphonomethyl)glycine and carfentrazone-ethyl. The final composition of the emulsion will be as follows:

DEPR:
To a 4:1 mixture of Aromatic 200/4-butyrolactone solvent is added 0.94 g of carfentrazone-ethyl, 5.00 g of Armul 1496 HF, and 5.00 g of Armul 1505 HF. The mixture is blended until homogeneous.

DEPR:
N-(Phosphonomethyl)glycine and/or carfentrazone-ethyl spray compositions were prepared by mixing into water Roundup Ultra.RTM. herbicide (trade name for a herbicidal formulation containing approximately 360 g a.e./liter of mono(isopropylammonium) N-(phosphonomethyl)glycine, sold by Monsanto Company) and/or the carfentrazone-ethyl emulsifiable concentrate formulation prepared in Example 8. Plants were grown during the spring and summer in field plots measuring approximately 3.1 m by 7.5 m and through the duration of the test they received ambient light and were exposed to ambient temperatures. Test plots were located in Western, Midwestern, and Southern United States. Applications of the spray compositions were made using backpack sprayers calibrated to deliver a spray volume of approximately 93.4 liters per hectare (10 gallons per acre) using 11001, 110015, or 11002 FLATTAPR nozzles. The experimental design was a randomized complete block with three replications. Appropriate amounts of fertilizer were applied at the rate recommended for the production area. Percent

inhibition ratings, which were a visual measurement of the effectiveness of each treatment in comparison to untreated plants, ranged from 0 to 100%. Inhibition of 0% indicates no effect, and inhibition of 100% indicates that all of the plants are completely dead.

DEPR:
For each plant species examined, treatments were made with N-(phosphonomethyl)glycine, with carfentrazone-ethyl, or with a composition containing a mixture of N-(phosphonomethyl)glycine and carfentrazone-ethyl at the rates indicated in Tables 3 through 8. Percent inhibition was measured at 3, 7 (or 8), and 21 days after treatment (DAT). Results for control of six plant species treated with various regimens of N-(phosphonomethyl)glycine and/or carfentrazone-ethyl, averaged for all sites of each treatment are shown in Tables 3 through 22.

DEPL:
a. Preparation of Carfentrazone-ethyl Solution

DEPL:
a. Preparation of Carfentrazone-ethyl Solution

DEPL:
a. Preparation of Carfentrazone-ethyl Solution

DEPL:
a. Preparation of Carfentrazone-ethyl Solution

DEPL:
a. Preparation of Carfentrazone-ethyl Solution

DEPL:
a. Preparation of Carfentrazone-ethyl Solution

DEPL:
a. Preparation of Carfentrazone-ethyl Solution

DEPL:
a. Preparation of Carfentrazone-ethyl Solution

DEPL:
a. Preparation of Carfentrazone-ethyl Solution

DEPL:
a. Carfentrazone-ethyl Pre-mix

DEPL:
a. Carfentrazone-ethyl Pre-mix

DEPL:
a. Carfentrazone-ethyl Pre-mix

DEPC:
Carfentrazone-ethyl Emulsifiable Concentrate

DETL:

Ingredient	Weight Percent
carfentrazone-ethyl	1.25
polyoxyethylenepolyoxy 7.70 propylene-2-ethylhexyl ether Silwet L-77	4.41
Surfynol 465	3.32
trixylenyl phosphate	3.32
monoammonium 25.60 glyphosate (86% a.e.*) (22.00 a.e.) ammonium sulfate	54.40
powder	

*a.e. = acid equivalent

DETL:

Ingredient	Weight Percent
carfentrazone-ethyl	2.07
polyoxyethylenepolyoxy 6.65 propylene-2-ethylhexyl ether Silwet L-77	0.95
Surfynol 465	7.58
trixylenyl phosphate	3.8
phenylxylylethane	0.48
bis(.alpha.-methylbenzyl)xylene	0.43
xylene based solvents	0.04
monoammonium 42.00 glyphosate (86% a.e.) (36.12 a.e.) ammnonium sulfate	36.00
powder	

DETL:
_____ Ingredient Weight Percent
_____ carfentrazone-ethyl 1.25
polyoxyethylenepolyoxy 7.70 propylene-2-ethylhexyl ether Silwet L-77 4.41
Surfynol 465 3.32 trixylenyl phosphate 3.32 monoammonium 42.00 glyphosate (86%
a.e.) (36.12 a.e.) ammonium sulfate 38.00 powder
_____

DETL:
_____ Ingredient Weight Percent
_____ carfentrazone-ethyl 1.25
polyoxyethylenepolyoxy 7.70 propylene-2-ethylhexyl ether Silwet L-77 4.41
Surfynol 465 3.32 trixylenyl phosphate 3.32 monoammonium 80.00 glyphosate (86%
a.e.) (68.8 a.e.) powder _____

DETL:
_____ Ingredient Weight Percent
_____ carfentrazone-ethyl 2.02
polyoxyethylenepolyoxypro 6.60 pylene-2-ethylhexyl ether Silwet L-77 0.95
Surfynol 465 7.50 xylene based solvent mix 0.95 2-ethylhexyl diphenyl 3.80
phosphate monoammonium glyphosate 42.35 (85% a.e.) (36.00 a.e.) ammonium sulfate
powder 35.33 water 0.50 _____

DETL:
_____ Ingredient Weight Percent
_____ carfentrazone-ethyl 0.80
polyoxyethylenepolyoxy 6.60 propylene-2-ethylhexyl ether Sorpol 7537 4.00

DETL:
_____ Ingredient Weight Percent
_____ carfentrazone-ethyl 1.25
polyoxyethylenepolyoxy 5.00 propylene-2-ethylhexyl ether Surfynol 465 3.00
monoammonium 25.60 glyphosate (86% a.e.) (22.00 a.e.) ammonium sulfate 65.15
powder kneading water 7.00 _____

DETL:
_____ Ingredient Weight Percent
_____ carfentrazone-ethyl 1.25
polyoxyethylenepolyoxy 5.00 propylene-2-ethylhexyl ether Surfynol 465 3.00 Silwet
L-77 0.50 polyoxyethylene-2,4,6- 1.00 tristyrylphenyl ether monoammonium 25.60
glyphosate (86% a.e.*) (22.00 a.e.) ammonium sulfate 63.65 powder kneading water
7.00 _____

DETL:
_____ Ingredient Weight Percent
_____ carfentrazone-ethyl 1.25
polyoxyethylenepolyoxy 5.00 propylene-2-ethylhexyl ether Surfynol 465 3.00
alkylbenzene 1.00 derivative solvent monoammonium 25.60 glyphosate (86% a.e.*)
(22.00 a.e.) ammonium sulfate 64.15 powder kneading water 7.00
_____

DETL:
_____ Ingredient Weight Percent
_____ carfentrazone-ethyl 2.92 (95%) Armul 1496
HF 2.00 Armul 1505 HF 2.00 Aromatic 200 6.00 mono(isopropylammonium) 42.52
glyphosate (19.44 a.e.) (45.72% a.e.) Ethomeen T/25 10.00 sodium sulfite 0.10
propylene glycol 2.00 silicone defoamer 0.10 Kelzan S 0.06 Proxel GXL 0.12 water
32.18 _____

DETL:
_____ Ingredient Weight Percent
_____ carfentrazone-ethyl 2.45 (95%) Armul
1496/1505 HF 5.00 Aromatic 200 25.00 mono(isopropylammonium) 36.05 glyphosate
(16.48 a.e.) (45.72% a.e.) Ethomeen T/25 10.00 sodium sulfite 0.10 propylene
glycol 1.00 Mazu 100DS silicone 0.10 defoamer fumed silica 2.00 deionized water
18.30 _____

DETL:
_____ Ingredient Weight Percent
_____ carfentrazone-ethyl 2.45 (95%) Armul
1496/1505 HF 5.00 Aromatic 200 25.00 mono(isopropylammonium) 36.05 glyphosate

(16.48 a.e.) (45.72% a.e.) Surfonic AGM 550 10.00 sodium sulfite 0.10 propylene glycol 1.00 Mazu 100DS silicone 0.10 defoamer fumed silica 2.00 deionized water 18.30

DETL:
TABLE 3 Setaria faberi (Giant Foxtail)
(Average of 3 sites) % Inhibition Treatment 3 DAT 8 DAT 21 DAT
631 g a.e./ha glyphosate 49 98 100 841 g a.e./ha glyphosate 50 99 100 1262 g a.e./ha glyphosate 58 100 100 35 g/ha carfentrazone-ethyl 21 13 1 69.5 g/ha carfentrazone-ethyl 36 27 2 35 g/ha carfentrazone-ethyl + 74 97 99 631 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 79 97 100 631 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 70 97 98 841 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 78 98 100 841 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 76 100 100 1262 g a.e./ha glyphosate 69.5 g/hacarfentrazone-ethyl + 78 99 100 1262 g a.e./ha glyphosate

DETL:
TABLE 4 Chenopodium album (Common Lambsquarter) (Average of 3 sites) % Inhibition Treatment 3 DAT 8 DAT 21 DAT
631 g a.e./ha glyphosate 62 93 99 69.5 g/ha carfentrazone-ethyl + 79 93 97 631 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 78 93 99 841 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 82 95 99 841 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 83 95 100 1262 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 80 94 100 1262 g a.e./ha glyphosate

DETL:
TABLE 5 Abutilon theophrasti (Velvetleaf)
(Average of 3 sites) % Inhibition Treatment 3 DAT 8 DAT 21 DAT
631 g a.e./ha glyphosate 62 93 99 841 g a.e./ha glyphosate 33 67 87 1262 g a.e./ha glyphosate 35 77 93 35 g/ha carfentrazone-ethyl 52 47 27 69.5 g/ha carfentrazone-ethyl 70 55 33 35 g/ha carfentrazone-ethyl + 69 73 69 631 g a.e./haglyphosate 69.5 g/ha carfentrazone-ethyl + 70 79 79 631 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 63 77 83 841 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 69 78 88 841 ga.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 66 86 91 1262 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 71 84 89 1262 g a.e./ha glyphosate

DETL:
TABLE 6 Triticum spp. (Volunteer Wheat)
(Average of 2 sites) % Inhibition Treatment 3 DAT 8 DAT 21 DAT
631 g a.e./ha glyphosate 13 39 82 841 g a.e./ha glyphosate 14 53 97 1262 g a.e./ha glyphosate 22 42 98 35 g/ha carfentrazone-ethyl 12 13 4 69.5 g/ha carfentrazone-ethyl 10 13 5 35 g/ha carfentrazone-ethyl + 23 48 83 631 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 26 56 90 631 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 25 59 97 841 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 24 53 94 841 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 24 63 99 1262 g a.e./ha glyphosate 69.5 g4ha carfentrazone-ethyl + 25 67 100 1262 g a.e./ha glyphosate

DETL:
TABLE 7 Ipomoea spp. (Morningglory)
(Average of 2 sites) % Inhibition Treatment 3 DAT 8 DAT 21 DAT
631 g a.e./ha glyphosate 28 56 61 841 g a.e./ha glyphosate 31 56 66 1262 g a.e./ha glyphosate 36 67 72 35 g/ha carfentrazone-ethyl 73 75 43 69.5 g/ha carfentrazone-ethyl 80 85 61 35 g/ha carfentrazone-ethyl + 77 76 71 631 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 85 91 90 631 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 88 80 79 841 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 84 90 90 841 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 79 84 87 1262 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 83 94 93 1262 g a.e./ha glyphosate

DETL:
841 g a.e./ha glyphosate 24 58 90 1262 g a.e./ha glyphosate 29 62 98 35 g/ha
carfentrazone-ethyl 18 23 56 69.5 g/ha carfentrazone-ethyl 20 26 60 35 g/ha
carfentrazone-ethyl + 29 57 92 631 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 32 61 95 631 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 33 59 100 841 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 39 67 100 841 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 37 66 100 1262 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 40 68 100 1262 g a.e./ha glyphosate

DETL:
TABLE 9 _____ Bromus tectorum (Downy Brome) (1 site) % Inhibition Treatment 3 DAT 8 DAT 21 DAT
_____ 631 g a.e./ha glyphosate 40 82 100 841 g a.e./ha glyphosate 37 88 99 1262 g a.e./ha glyphosate 43 91 100 35 g/ha
carfentrazone-ethyl 20 30 21 69.5 g/ha carfentrazone-ethyl 20 32 17 35 g/ha
carfentrazone-ethyl + 48 84 98 631 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 42 89 100 631 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 47 92 100 841 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 47 90 100 841 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 54 95 100 1262 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 46 92 100 1262 g a.e./ha glyphosate

DETL:
TABLE 10 _____ Lolium multiflorum (Italian Ryegrass) (1 site) % Inhibition Treatment 3 DAT 8 DAT 21 DAT
_____ 631 g a.e./ha glyphosate 42 87 94 841 g a.e./ha glyphosate 41 85 94 1262 g a.e./ha glyphosate 40 94 100 35 g/ha
carfentrazone-ethyl 12 15 0 69.5 g/ha carfentrazone-ethyl 12 15 0 35 g/ha
carfentrazone-ethyl + 38 76 89 631 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 39 85 92 631 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 40 82 91 841 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 46 90 100 841 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 45 92 100 1262 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 45 97 100 1262 g a.e./ha glyphosate

DETL:
TABLE 11 _____ Brassica kaber (Wild Mustard) (1 site) % Inhibition Treatment 3 DAT 8 DAT 21 DAT
_____ 631 g a.e./ha glyphosate 20 79 96 841 g a.e./ha glyphosate 26 83 100 1262 g a.e./ha glyphosate 37 87 100 35 g/ha
carfentrazone-ethyl 27 23 0 69.5 g/ha carfentrazone-ethyl 35 18 0 35 g/ha
carfentrazone-ethyl + 33 79 96 631 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 35 85 99 631 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 29 84 99 841 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 34 86 100 841 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 32 89 1OD 1262 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 35 89 99 1262 g a.e./ha glyphosate

DETL:
TABLE 12 _____ Amaranthus retroflexus (Redroot Pigweed) (1 site) % Inhibition Treatment 3 DAT 8 DAT 21 DAT
_____ 631 g a.e./ha glyphosate 77 95 99 841 g a.e./ha glyphosate 88 100 100 1262 g a.e./ha glyphosate 88 99 99 35 g/ha
carfentrazone-ethyl 75 82 67 69.5 g/ha carfentrazone-ethyl 67 85 93 35g/ha
carfentrazone-ethyl + 87 95 97 631 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 95 97 99 631 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 92 91 96 841 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 93 99 100 841 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 98 99 100 1262 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 97 96 100 1262 g a.e./ha glyphosate

DETL:
TABLE 13 _____ Amaranthus rudis (Common Waterhemp) (1 site) % Inhibition Treatment 3 DAT 8 DAT 21 DAT
_____ 631 g a.e./ha glyphosate 83 100 100 841 g

a.e/ha glyphosate 54 98 100 1262 g a.e./ha glyphosate 38 100 100 35 g/ha
carfentrazone-ethyl 56 40 13 69.5 g/ha carfentrazone-ethyl 86 56 10 35 g/ha
carfentrazone-ethyl + 84 81 95 631 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 78 100 100 631 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 81 82 89 841 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 89 92 90 841 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 86 N.C. 100 1262 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 86 92 90 1262 g a.e./ha glyphosate
N.C. = Data not collected.

DETL:
TABLE 14 Brachiaria platyphylla (Broadleaf Signalgrass) (1 site) Treatment 3 DAT 8 DAT 21 DAT
631 g a.e./ha glyphosate 42 79 76 841 g a.e./ha glyphosate 50 88 79 1262 g a.e./ha glyphosate 48 92 86 35 g/ha
carfentrazone-ethyl 38 33 0 69.5 g/ha carfentrazone-ethyl 43 38 13 35 g/ha
carfentrazone-ethyl + 52 82 95 631 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 57 83 100 631 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 58 87 100 841 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 62 85 100 841 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 57 92 98 1262 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 65 92 100 1262 g a.e./ha glyphosate

DETL:
Cassia obtusifolia (Sicklepod) (1 site) % Inhibition Treatment 3 DAT 8 DAT 21 DAT
631 g a.e./ha glyphosate 74 96 98 841 g a.e./ha glyphosate 75 97 98 1262 g a.e./ha glyphosate 80 99 97 35 g/ha
carfentrazone-ethyl 58 48 28 69.5 g/ha carfentrazone-ethyl 60 60 38 35 g/ha
carfentrazone-ethyl + 81 94 98 631 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 89 97 97 631 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 88 98 97 841 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 81 92 98 841 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 82 98 99 1262 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 82 99 99 1262 g a.e./ha glyphosate

DETL:
TABLE 16 Lolium perenne (Perennial Ryegrass) (1 site) % Inhibition Treatment 3 DAT 8 DAT 21 DAT
631 g a.e./ha glyphosate 20 63 92 841 g a.e./ha glyphosate 19 69 96 1262 g a.e./ha glyphosate 25 76 98 35 g/ha
carfentrazone-ethyl 8 18 14 69.5 g/ha carfentrazone-ethyl 8 16 13 35 g/ha
carfentrazone-ethyl + 23 64 91 631 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 20 69 93 631 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 26 68 95 841 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 30 71 94 841 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 26 79 100 1262 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 28 83 100 1262 g a.e./ha glyphosate

DETL:
TABLE 17 Malva Neglecta (Common Mallow) (1 site) % Inhibition Treatment 3 DAT 8 DAT 21 DAT
631 g a.e./ha glyphosate 43 62 77 841 g a.e./ha glyphosate 43 63 83 1262 g a.e./ha glyphosate 48 65 84 35 g/ha
carfentrazone-ethyl 67 65 74 69.5 g/ha carfentrazone-ethyl 72 68 86 35 g/ha
carfentrazone-ethyl + 72 80 93 631 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 70 79 97 631 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 73 80 100 841 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 68 82 99 841 g a.e./ha glyphosate 35 g/ha
carfentrazone-ethyl + 72 88 98 1262 g a.e./ha glyphosate 69.5 g/ha
carfentrazone-ethyl + 70 88 99 1262 g a.e./ha glyphosate

DETL:
TABLE 18 Polygonum convolvulus (Wild Buckwheat) (1 site) % Inhibition Treatment 3 DAT 8 DAT 21 DAT
631 g a.e./ha glyphosate 8 22 25 841 g a.e./ha glyphosate 15 32 39 1262 g a.e./ha glyphosate 38 46 63 35 g/ha
carfentrazone-ethyl 26 25 0 69.5 g/ha carfentrazone-ethyl 28 23 0 35 g/ha

carfentrazone-ethyl + 36 52 53 631 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 34 55 49 631 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 35 60 41 841 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 40 64 53 841 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 47 65 69 1262 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 51 73 61 1262 g a.e./ha glyphosate

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DETL:
TABLE 19 _____ Salsola iberica (Russian Thistle) (1 site) % Inhibition Treatment 3 DAT 8 DAT 21 DAT _____ 631 g a.e./ha glyphosate 47 81 96 841 g a.e./ha glyphosate 54 94 97 1262 g a.e./ha glyphosate 52 99 100 35 g/ha carfentrazone-ethyl 33 10 0 69.5 g/ha carfentrazone-ethyl 25 12 0 35 g/ha carfentrazone-ethyl + 54 80 95 631 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 65 93 98 631 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 57 93 96 841 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 61 94 99 841 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 67 97 100 1262 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 61 95 96 1262 g a.e./ha glyphosate

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DETL:
TABLE 20 _____ Sesbania exaltata (Hemp Sesbania) (1 site) Treatment 3 DAT 8 DAT 21 DAT _____ 631 g a.e./ha glyphosate 73 94 96 841 g a.e./ha glyphosate 75 9.5 94 1262 g a.e./ha glyphosate 75 99 93 35 g/ha carfentrazone-ethyl 52 50 53 69.5 g/ha carfentrazone-ethyl 65 60 60 35 g/ha carfentrazone-ethyl + 84 92 97 631 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 85 99 100 631 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 85 97 95 841 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 86 97 100 841 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 78 97 98 1262 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 81 99 100 1262 g a.e./ha glyphosate

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DETL:
TABLE 21 _____ Sida spinosa (Prickly Sida) (1 site) % Inhibition Treatment 3 DAT 8 DAT 21 DAT _____ 631 g a.e./ha glyphosate 31 66 83 841 g a.e./ha glyphosate 33 69 90 1262 g a.e./ha glyphosate 34 75 97 35 g/ha carfentrazone-ethyl 39 32 13 69.5 g/ha carfentrazone-ethyl 42 40 23 35 g/ha carfentrazone-ethyl + 45 63 81 631 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 44 74 85 631 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 43 63 86 841 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 49 65 87 841 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 45 77 94

DETL:
1262 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 47 81 96 1262 g a.e./ha glyphosate _____

DETL:
TABLE 22 _____ Sorghum halepense (Johnsongrass) (1 site) % Inhibition Treatment 3 DAT 8 DAT 21 DAT _____ 631 g a.e./ha glyphosate 58 91 97 841 g a.e./ha glyphosate 60 94 98 1262 g a.e./ha glyphosate 62 95 99 35 g/ha carfentrazone-ethyl 39 27 9 69.5 g/ha carfentrazone-ethyl 44 35 23 35 g/ha carfentrazone-ethyl + 65 88 97 631 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 70 88 98 631 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 70 92 99 841 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 73 94 99 841 g a.e./ha glyphosate 35 g/ha carfentrazone-ethyl + 70 94 99 1262 g a.e./ha glyphosate 69.5 g/ha carfentrazone-ethyl + 73 96 100 1262 g a.e./ha glyphosate

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CLPR:
5. The combination of claim 4 wherein the triazolinone herbicide comprises sulfentrazone.

CLPR:
27. The composition of claim 26 wherein the triazolinone herbicide comprises

carfentrazone-ethyl.

CLPR:
29. The composition of claim 28 wherein the triazolinone herbicide comprises sulfentrazone.

CLPR:
86. The process of claim 85 wherein the triazolinone herbicide comprises carfentrazone-ethyl.

CLPR:
88. The process of claim 87 wherein the triazolinone herbicide comprises sulfentrazone.

CLPR:
104. The method of claim 103 wherein the triazolinone herbicide comprises sulfentrazone.

CLPV:
the hydrophobic phase comprises carfentrazone-ethyl, an aromatic solvent, calcium dodecylbenzenesulfonate, a nonionic surfactant, and a silicone defoamer; and

ORPL:
F.E. Dayan et al., "Selectivity and Mode of Action of Carfentrazone-ethyl, a Novel Phenyl Triazolinone Herbicide," Pest.Sci, 1997, pp. 65-73, vol. 51, Great Britain.

ORPL:
H.J. Lee et al, "Evaluation of Carfentrazone-ethyl Alone and in Combination with Glyphosate or Glufoeinate for Weed Control in Orchards,", Korean J. Weed Sci., 1st ed., vol. 17 (No. 3), p. 256-261, (Mar. 14, 1997).

ORPL:
H.J. Lee et al, "Evaluation of Carfentrazone-ethyl in Combination with Glyphosate and Glufosinate for Weed Control in Orchards", Proceedings of the Sixteenth Asian-Pacific Weed Science Society Conference, Malaysian Plant Protection Society (Kuala Lumpur, Malaysia), vol. 8 (No. 12), p. 306-309, (Sep. 14, 1997).

WEST

Generate Collection

L24: Entry 10 of 16 File: USPT Dec 1, 1998

DOCUMENT-IDENTIFIER: US H001764 H
TITLE: Use of benzyluracils for controlling weeds in cereal crops

BSPR:
Certain herbicides are known to exert their herbicidal activity by inhibiting the enzyme protoporphyrinogen oxidase which is also referred to as PPO. PPO is an enzyme necessary for porphyrin synthesis in the biosynthetic pathway to chlorophyll in plants. In susceptible plant species PPO inhibition ultimately disrupts the cell membrane and causes desiccation. As a herbicide class PPO inhibitors have been found to be highly effective for the control of Galium and Veronica weed species, but generally have not been found to control other weeds that are commonly found in cereals such as Papaver, Matricharia, Viola, and Polygonum. The high use rates that are normally required of PPO inhibitors to control these weeds usually cause unacceptable damage to the cereal crop for which the protection is sought. This activity and selectivity profile for PPO inhibitors generally is exemplified by FMC's carfentrazone-ethyl which is described in U.S. Pat. No. 5,125,958 ##STR2##

DEPR:
Table 4 shows comparative growth chamber testing of selected benzyluracils alongside carfentrazone-ethyl. For the growth chamber testing, the benzyluracils were used as technical material. In the table, carfentrazone-ethyl is identified as "carf", and compound numbers "1" and "2" are as described in Table 1.

DEPR:
The weeds Matricharia, Viola, and Polygonum are represented by the last three columns respectively in Table 4. The results show the superior selectivity of the benzyluracils when compared to carfentrazone-ethyl for controlling these weeds relative to damaging the wheat in growth chamber testing. Overall the best selectivity was observed with Compound 2, 1-methyl -3-(2,5-dichloro-3-methoxyphenylmethyl)-6-trifluoromethyl-2,4-(1H, 3H)-pyr imidinedione.

DEPR:
Compound 2 and carfentrazone-ethyl were also compared under field conditions. For field testing carfentrazone-ethyl was formulated as 40% water dispersible granule and compound 2 was formulated as a 5% suspension concentrate. The field testing results showed that the benzyluracils provide significant control (>70%) of the Papaver, Matricharia, and Viola weeds at use rates in the range of 20 to 120 g/ha that are generally safe to wheat. In contrast, carfentrazone-ethyl is much less effective in controlling these weeds at use rates where the wheat is little effected.